17" Auto scan Colour Monitor

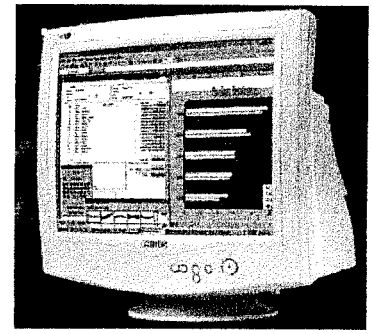
Chassis

Service
Service
Service

EPA POLLUTION PREVENTER

DDC/Power saving/TCO99
Picture tilt control

107B2 CM24 GSIII



107B20/74H

ServiceManual

Horizontal frequencies
30 - 92 kHz

TABLE OF CONTENTS

Description	Page
Important Safety Notice	2
Technical Data	3
Introduction	4
OSD Menu tree structure	5
OSD Lock Function &Service Mode	6
Warning and Notes	7
Mechanical Instructions	8
Wiring Diagram	9
DDC Instructions	10~13
Hex Data of DDC	14
Electrical Adjustments	15~18
Block Diagram	19
Video Panel C.B.A	20
Video Panel(A) Schematic Diagram	21

Description	Page
Main Panel C.B.A.	22
Main Panel(B1) Schematic Diagram	23
CPU(B2)Schematic Diagram &Waveforms	24
Power Supply(C)Schematic Diagram	25
Control Panel Schematic Diagram &C.B.A	26
Repair Tips	27
Exploded View	28
Recommended parts list	29
Spare parts list	30~35
Repair flow chart	36~43
General product specification	44~66
Safety test requirements	67
LightFrame for Windows	68~69

SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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飛利浦 PHILIPS PHILIPS

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* *Broken Line* ▬ ▪ ▬ ▪ ▬ ▪

Technical Data

Technical Specifications

CRT

Size and deflection	: 17" inch / 41 cm; 90° deflection angle
Dot pitch /Grille pitch	: 0.25 mm
Horizontal pitch	: 0.21 mm
Tube type	: Shadow mask, Real Flat, high contrast, anti-glare, anti-static, anti-reflection, light transmission 47%
Phosphor	: P22
Recommended display area	: 12.0" x 9.4" / 306 x 230 mm
Maximum display area	: 12.9" x 9.7" /327 x 245 mm

Scanning

Horizontal scanning	: 30 - 92 KHz
Vertical scanning	: 50 - 160 Hz

Video

ideo dot rate	: 234MHz
Input impedance	
- Video	: 75 ohms
- Sync	: 2.2 K ohms
Input signal levels	: 0.7 Vpp
Sync input signal	: Separate sync Composite sync
Sync polarities	: Positive and negative

White Color Temperature

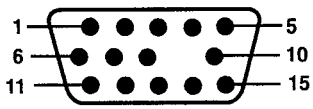
Chromaticity CIE coordinates	:
at 9300 K degrees	: x = 0.283 / y = 0.297
at 6500 K degrees	: x = 0.313 / y = 0.329
at 5500 K degrees	: x = 0.332 / y = 0.347

Physical Characteristics	
Dimensions	: 15.7" x 16.1" x 16.1" / 399 x 410 x 408 mm (including base) : 15.7" x 14.7" x 16.1" / 399 x 373 x 408 mm (excluding base)
Weight :	: 15.0 kg
Power supply	: 90- 264 VAC, 50/60Hz
Temperature (operating)	: 0°C to 40°C / 32° F to 104° F
Temperature (storage)	: -25°C to 65°C / -13° F to 149° F
Relative humidity	: 5% to 95%

* Resolution 1280 x 1024, standard size, contrast max., brightness 50%, 9300°K, full white pattern.

** These information are subject to change without notice.

Pin Assignment



Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Identical output - connected to pin 10
5	Salf test
6	Red video ground
7	Green video ground
8	Blue video ground
9	No pin
10	Logic ground
11	Identical output - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H + V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)

Automatic Power Saving

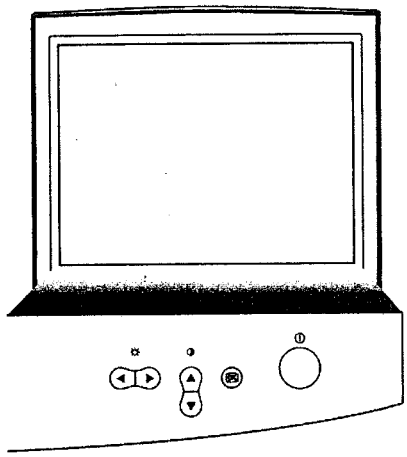
If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. And if an input from a keyboard, mouse or other input device is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature:

Power Management Definition						
VESA's Mode	Video	H-sync	V-sync	Power Used	Power Saving	LED color
ON	Active	Yes	Yes	< 90W	0%	Green
Stand-by	Blanked	No	Yes	< 10W	89%	Yellow
Suspend	Blanked	Yes	No	< 10W	89%	Yellow
OFF	Blanked	No	No	< 3W	96%	Amber

This monitor is ENERGY STAR® -compliant. As an ENERGY STAR® Partner, PHILIPS has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Installtion

Front View



POWER button switches your monitor on

OK button which when pressed will take you to the OSD controls

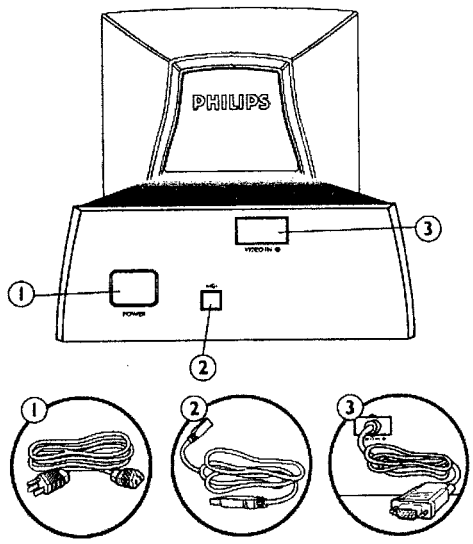
Contrast hotkey. When the UP arrow buttons is pressed, the adjustment control for the CONTRAST will show up.

UP and DOWN buttons are used when adjusting the OSD of your monitor

BRIGHTNESS hotkey. When the LEFT and RIGHT arrow buttons are pressed at the same time, then the adjustment controls for the BRIGHTNESS will show up.

LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

Back V



1. Power In - attach power cable here.
2. Video In - this is a cable which is already attached to your monitor. Connect the other end of the cable to your PC.

On-screen Display

Description of the On-Screen Display The OSD Tree The OSD Controls

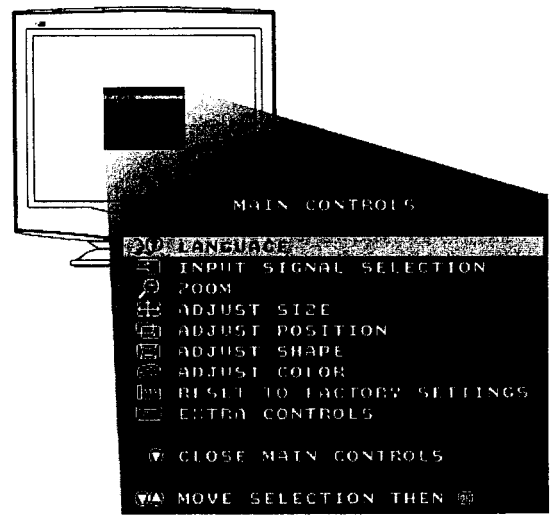
Description of the On Screen Display

What is the On-Screen Display ?

This is a feature in all Philips monitors which allows an end-user to adjust screen performance of monitors directly thought an on-screen instruction window. The user interface provides user-friendliness and ease-of-use when operating the monitor.

Basic and simple instruction on the control keys.

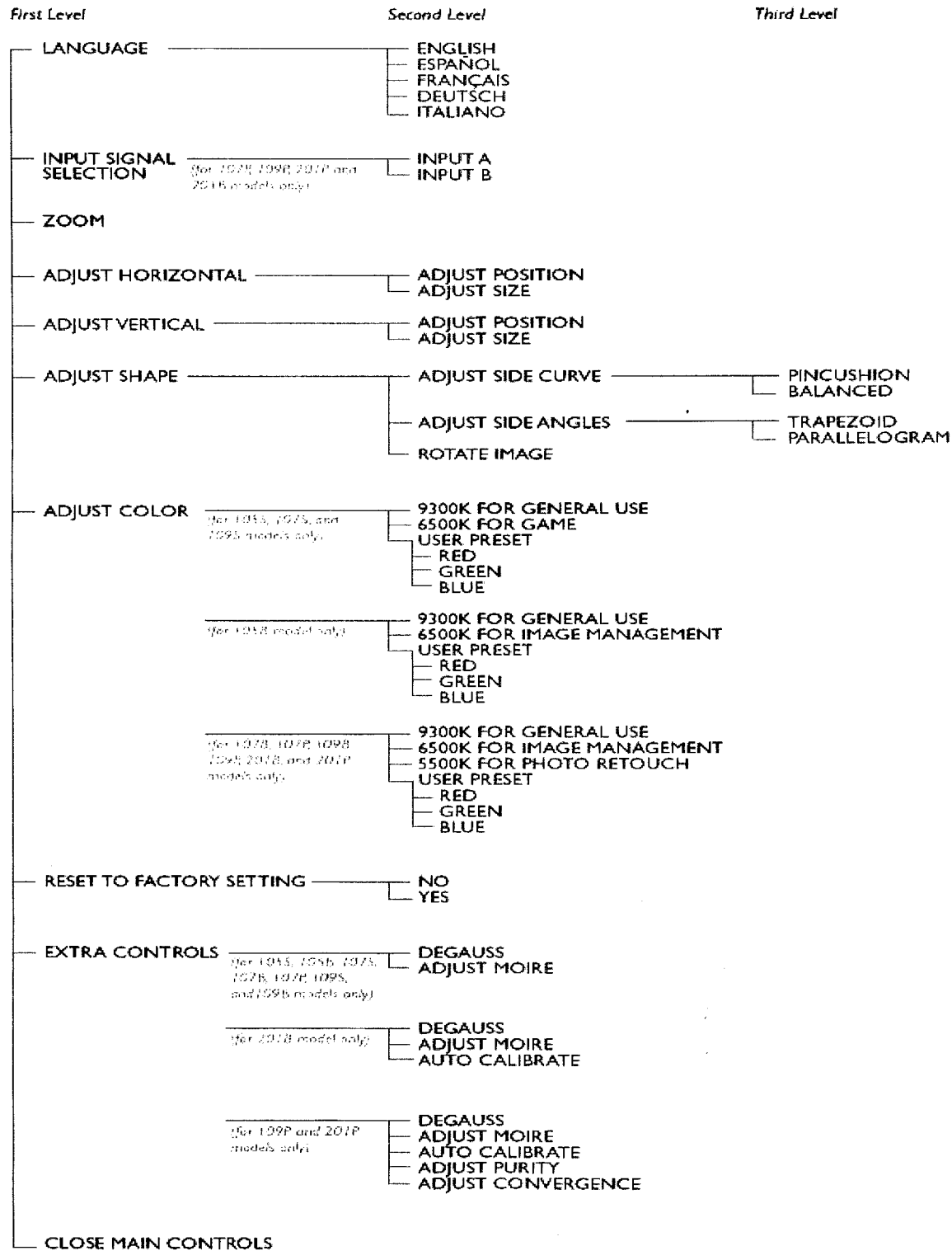
On the front controls of your monitor, once you press the button, the OSD Main Controls window will pop up and you can now start making adjustment to your monitor's various features. Use the or the keys to make your adjustments within.



OSD menu tree structure

The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.



* Specifications are subject to change without prior notice

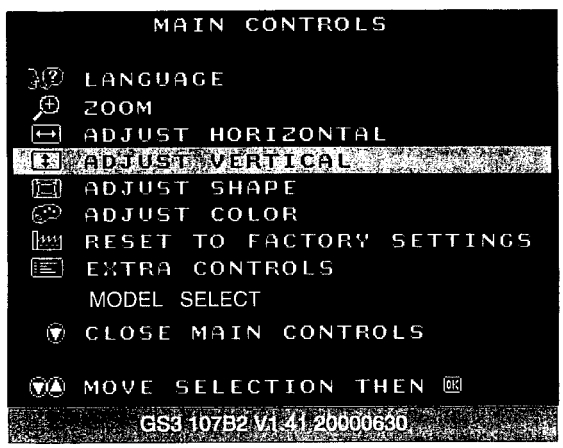
OSD Lock Function & Service Mode

To lock (disable) OSD function:

- Press OSD button " OK " for over 15 seconds to lock the OSD function. Release it, then OSD comes on the screen as below.

To unlock (enable) OSD function:

- Press OSD button " OK " for over 15 seconds again to unlock the OSD function.
  Release it, then OSD comes on the screen as below.



Disable/Enable all the WARNING SIGNAL

To disable all the WARNING SIGNAL :

- Disconnect the Interface cable of the monitor (Monitor is ON.).
- Press OSD button " OK " for over 15 seconds to disable all the WARNING SIGNAL. Then release the "OSD" button.
- If it is successful, then the signal " NO SIGNAL INPUT "disappeared to enter power saving-off mode.

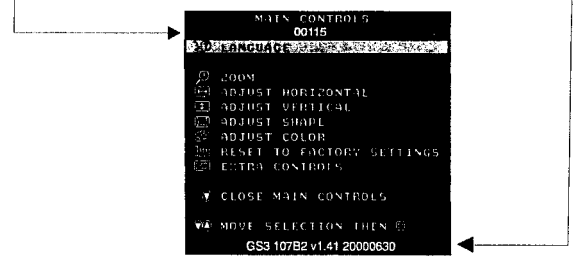
To enable all the WARNING SIGNAL :

- After disconnect the Interface cable of the monitor, then Monitor is powered ON.
- If it is successful, the signal " NO SIGNAL INPUT " comes on the screen again later.

Access Factory Mode

Firstly, get into Factory Adjustment Mode.

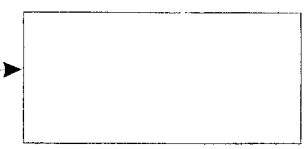
Push LEFT ◀ & RIGHT ▶ buttons at the same time for over 15 seconds and release them.
The factory message appears at the bottom of the main OSD menu. (for example : GS3 107B2 V1.41 20000630; 00115 is M.used hours)



Access Service Mode

- Disconnect the Interface cable of the monitor.
- Push LEFT ◀ & RIGHT ▶ buttons at the same time, then power ON.

- If it is successful, the signal " " comes on the screen later. (Background is white.). →



Exit "Service Mode" :

- Apply a normal VGA Signal to monitor, then monitor will exit " service mode" back to normal.

Warning and Notes

1. Safety Instructions for Repairs

1.1 Safety regulations require that during a repair:

- The set should be connected to the mains via an isolating transformer.
- Safety components, indicated by the symbol ⚠ , should be replaced by components identical to the original ones.
- When replacing the CRT, safety goggles must be worn.

1.2 Safety regulations require also that after a repair:

- The set should be returned in its original condition.
- The cabinet should be checked for defects to avoid touching, by the customer, of inner parts.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked on its function.
- The cableform and EHT cable are routed correctly and fixed with the mounted cable clamps in order to avoid touching of the CRT, hot components or heat sinks.

* Thermally loaded solder joints should be checked and resoldered where necessary. This includes components like LOT, the line output transistor, fly-back capacitor.

2. Maintenance Instructions

It is recommended to have a maintenance inspection carried out periodically by a qualified service employee. The interval depends on the usage conditions.

- During the maintenance inspection the above mentioned "safety instructions for repair" should be carried out The power supply and deflection circuitry on the chassis, the CRT panel and the neck of the CRT should be cleaned.

When cleaning the monitor on the outside:
- Always disconnect the monitor from the mains.
- Always use a damp AND NOT WET lint-free cloth.
- To clean the screen, apply a household glass cleaner to a cloth and then wipe the screen.
- Do not use solvents or abrasives on the monitor. It might discolour the cabinet and/or affect the anti glare treatment on your screen.

3. Warnings

3.1 In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx 30s).

3. 2 ESD ⚠

All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.

3.3 Be careful when taking measurements in the high-voltage section and on the picture tube panel.

3.4 Never replace modules or other components while the unit is switched on.

3.5 When making settings, use plastic rather than metal tools. This will prevent any short-circuit and the danger of a circuit becomes unstable.

3.6 After repair the wiring should be fastened once more in the cable clamps for this purpose.

3.7 Together with the deflection unit the picture tube is used as an integrated unit. Adjustment of this unit during repair is therefore not recommended.

4. Notes

The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

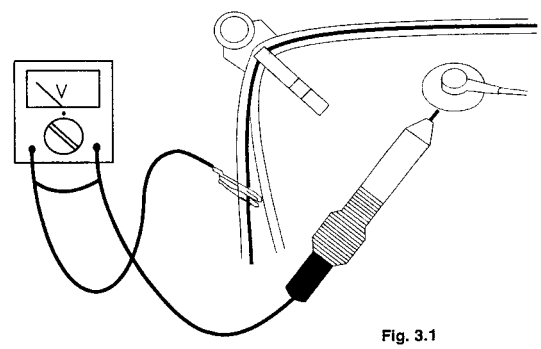


Fig. 3.1

Mechanical Instructions

0. Location of the panel

0.1 Main panel (1155)
0.2 Video panel (1157)

1. General

To be able to perform measurements and repairs on the "circuit boards", the monitor should be placed in Service Position (fig. 1) first:

How to remove the back cover of monitor :
There are 2 screws in the lid [1 screw are at the right side of the monitor, the other 1 screw are at the left side of the monitor],to fix the front cabinet and back cover of the monitor.

Step 1: To open the lid at the right-upper side and 1screw in right-downer side of the monitor.(Fig.2)
Step 2: To open the lid at the left-upper side and 1screw in left-downer side of the monitor.(Fig.3)
Step 3: To remove the back cover, you can see FIG.4

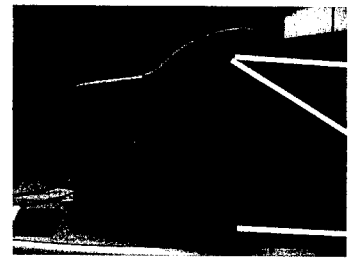


Fig. 2

Chassis :
- After remove the back cover, you can see the inside of the monitor as Fig. 4
- Then slide out chassis board and disconnect metal shield.

Video panel :
- Remove the metal shield on rear side of Video panel for measurement.

Main panel :
After remove the metal frame.
- To cut out cable tie and disconnect "video panel"
- To disconnect EHT cable
- To disconnect ground wire(1703) of video board.
- To disconnect M1802(6pin) to control panel.
- To disconnect M1401(4pin) yoke connector.
- To disconnect M1603(2pin) degaussing coil
- To slide out Main panel as Fig. 1.

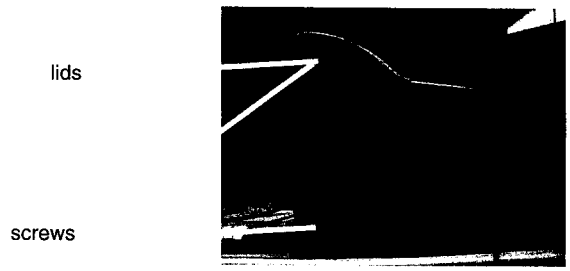


Fig. 3

Service position :
To get service position as Fig. 1 to Fig. 4.

2. Repair instructions
After the service position was obtained, all the panel's copper track side could be accessed.

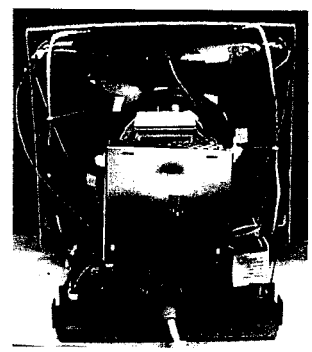


Fig. 4

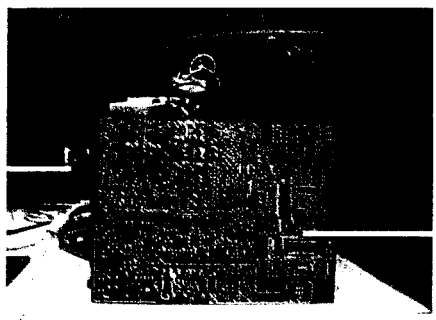
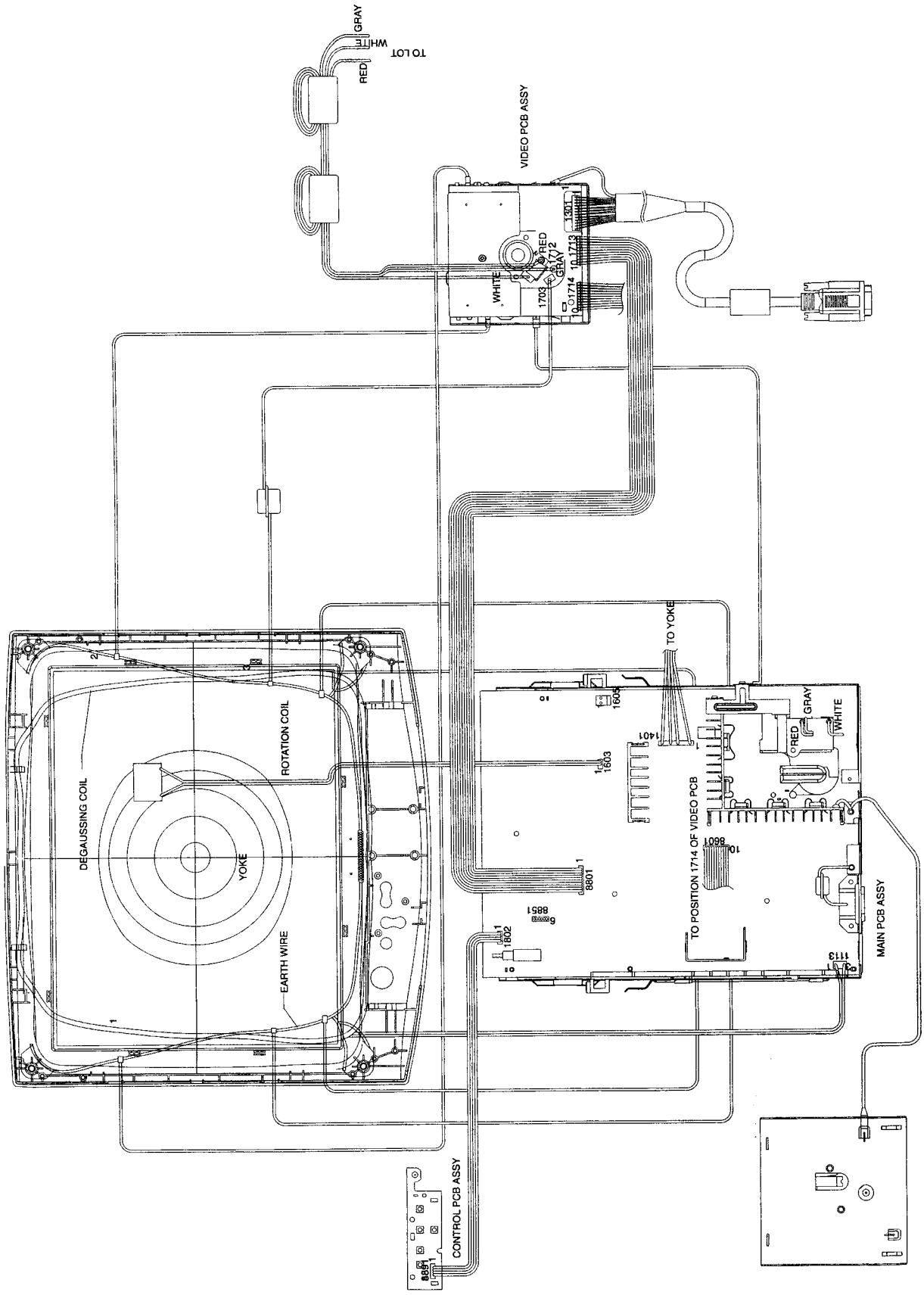


Fig. 1 Service Position

Wiring diagram



DDC Instructions

1. General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect,repaired monitor' the serial numbers have to be re-programmed.

It is advised to re-soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For the monitor : Standard Version 3.0
Structure Version 1.2

2. System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) shown as Fig. 1
4. Software DDC Alignment kits (4822 310 11184) shown as Fig. 2.

The kit contents: a. Alignment box x1
b. Printer cable x1
c. D-Sub cable x1

Note: The EDID301.EXE (Release Version 1.58, 20000818)is a windows-based program, which cannot be run in MS-DOS.

Figure 1 Diskette with EDID301.EXE

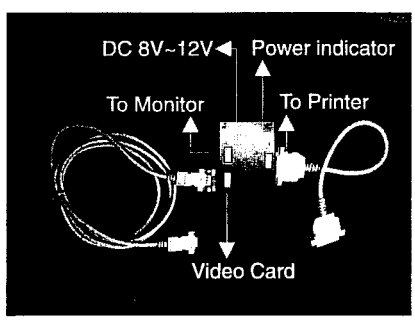
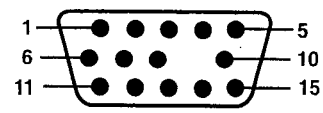


Fig. 2 Alignment Kits

3. Pin assignment

A. 15-pin D-Sub Connector

The 15-pin D-sub connector (male) of the signal cable on the 3rd row for DDC feature :



Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Identical output - connected to pin 10
5	Salf test
6	Red video ground
7	Green video ground
8	Blue video ground
9	No pin
10	Logic ground
11	Identical output - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H + V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)

DDC Instructions (Continued)

4. Configuration and procedure

There is no Hardware DDC (DDC IC) anymore. Main EEPROM stores all factory settings and DDC data (EDID code) which is so called Software DDC. The following section describes the connection and procedure for Software DDC application. The main EEPROM can be re-probrammed by enabling "factory memory data write" function on the DDC program (EDID301.EXE).

***** INITIALIZE ALIGNMENT BOX *****

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before re-programming DDC Data. Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as shown in Fig.3.

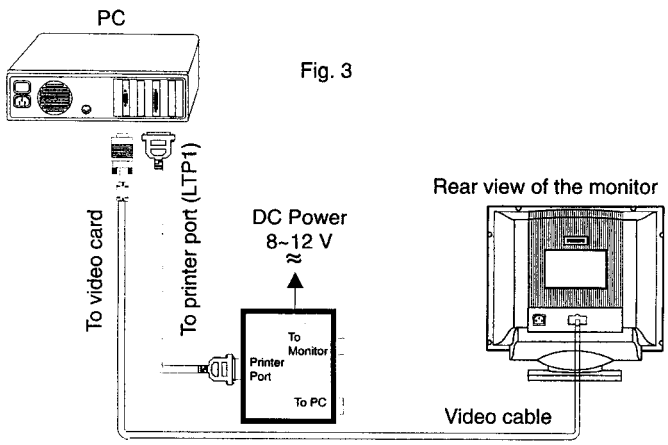


Fig. 3

Step 3: Installation of EDID301.EXE

Method 1: Start on DDC program

Start Microsoft Windows.
1. Insert the disk containing EDID30.EXE program into floppy disk drive.
2. Click Start , choose Run at start menu of Windows 95/98 as shown in Fig. 4.

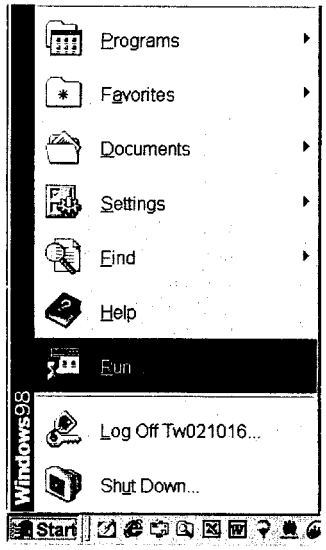


Fig. 4

3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).

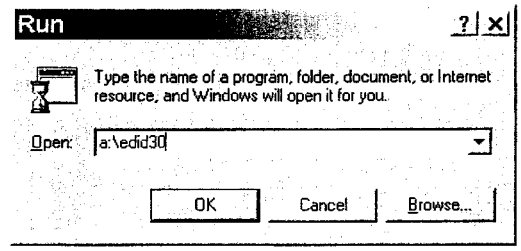


Fig. 5

4. Click **OK** button. The main menu appears (as shown in Fig. 6).
This is for initialize alignment box.

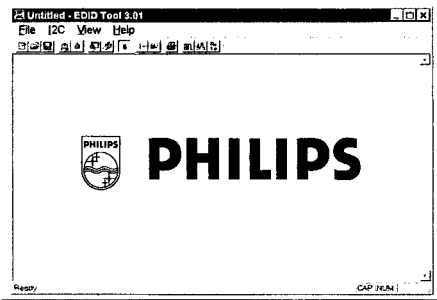


Fig. 6

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 7) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.

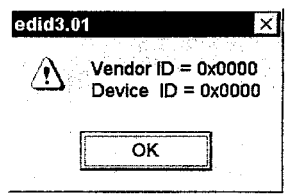


Fig. 7

Method 2: After create a shortcut of EDID301.EXE
: Double click EDID301 icon (as shown in Fig. 8) which is on the screen of Windows Wallpaper.
Bring up main menu of EDID301 as shown in Fig. 9.
This is for initialize alignment box.

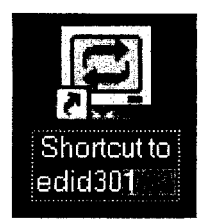


Fig. 8

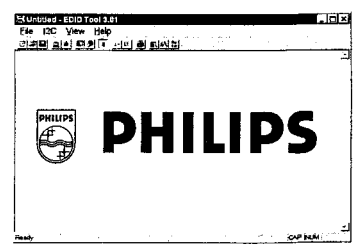
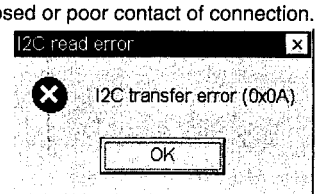


Fig. 9

Note 2: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.



DDC Instructions (Continued)

Re-programming EEPROM (Software DDC)

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 10

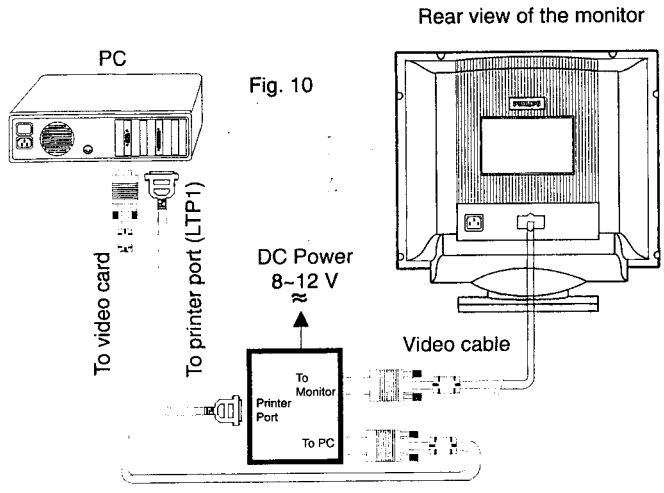


Fig. 10

Step 2: Read DDC data from monitor

1-1 Click the left key of Mouse, or hit any key on the keyboard, then the characters disappear from the screen.
1-2 Click icon as shown if Fig. 11 from the tool bar to bring up the "Configuration Setup" windows as shown in Fig. 12.

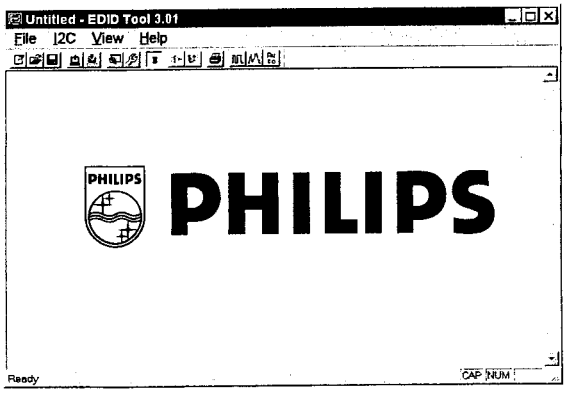


Fig. 11

2. Select the DDC2B as the communication channel.
Select **"Enable"** & fill out **"F0"** for Mapped EDID page address as shown in Fig. 12.

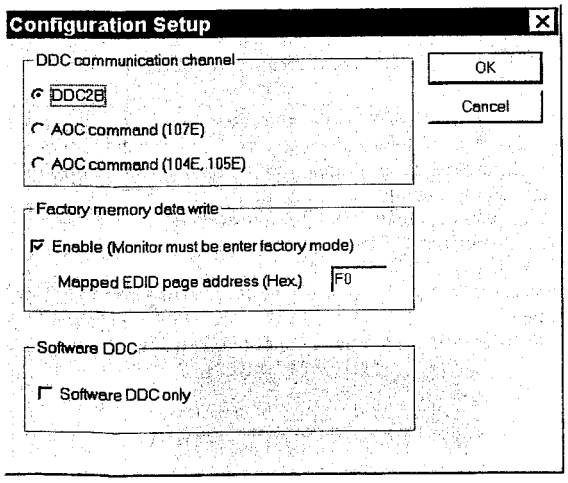


Fig. 12

3. Click OK button to confirm your selection.

4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.

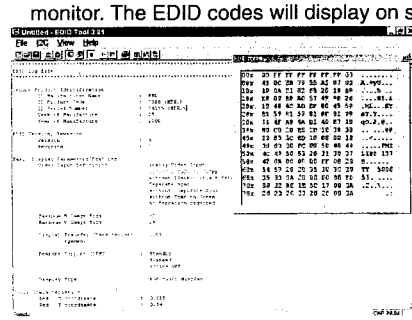


Fig. 13

Step 3: Modify DDC data (verify EDID version, week, year)

1. Click (new function) icon from the tool bar, bring up Step 1 of 9 as shown in Fig. 14 .
EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

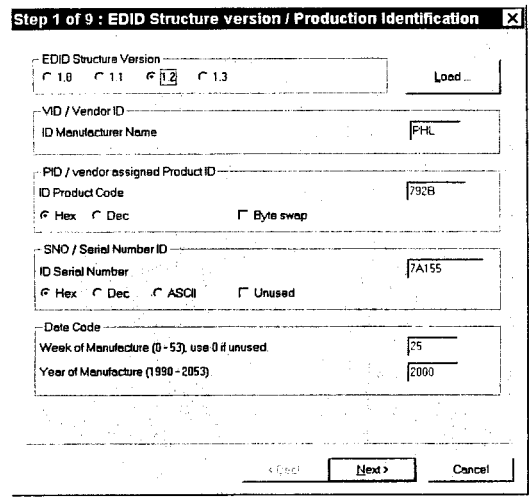


Fig. 14

Step 4: Modify DDC data (Monitor Serial No.)

1. Click **Next** till the Step 7 of 9 window appears as shown in Fig. 15.
2. Fill out the new Serial No. (for example, TY 500053).
3. Click **Next** till the last step window appears, then click **Finish** to exit the Step window.

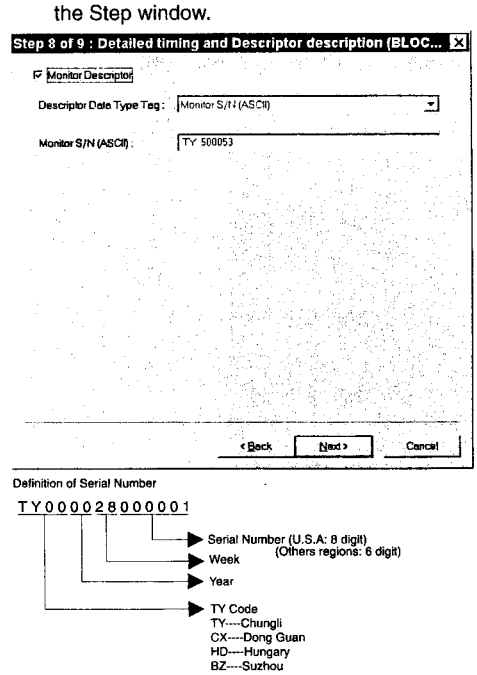


Fig. 15

Step 5: **Configuration Setup & Enter Factory Mode **

1. Click icon from the tool bar to bring up the Configuration Setup windows again. Then, select "Software DDC only" as shown in Fig. 16. Click "OK".

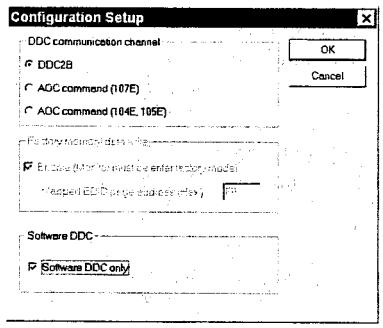


Fig. 16

Access factory mode:

- Turn off monitor (don't turn off PC)
- Press " ◀ " and " ▶ " simultaneously on the front control panel, then press " ⏻ ",wait till the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.

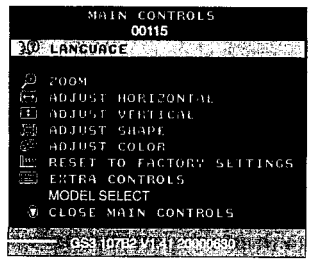


Fig. 17

Factory Mode Indicator

Step 6: Write DDC data

1. Click (Write EDID) icon from the tool bar to write DDC data. Bring up "Writing 0%~100%, ready" a progressing bar on the left down corner.
2. Click (Read EDID) to confirm it.

Step 7: Confirm Serial Number in User Mode

1. Press the ⏻ button to turn off the monitor. Press the ⏻ button again to turn on the monitor.
2. Press the OK button to bring up the OSD Main Menu.
3. Press the ▼ button to select Extra Control, press the OK button to confirm your selection.
4. Confirm the Serial Number is updated as shown in Fig. 18.

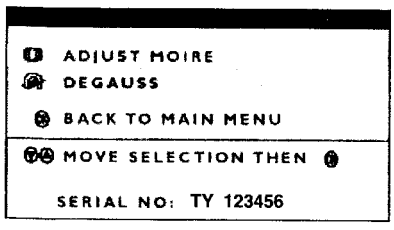


Fig. 18

Step 8: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 19.
   The file type is EDID301 file (*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc flie to re-load it into EEPROM for DDC Data application.

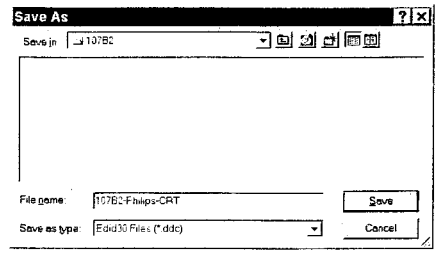


Fig. 19

2. Click **Save.**

Step 9: Load DDC data

1. Click from the tool bar.
2. Select the file you want to open as shown in Fig. 20.
3. Click **Open.**
4. Access "Factory Mode" and enable "Software DDC only" as shown in Fig. 16.
5. Write EDID.

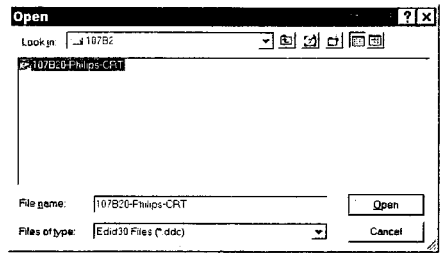


Fig. 20

Step 10: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 21. (EDID Tool 3.01)

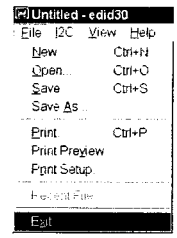


Fig. 21

Note1 : In User Mode: Read DDC data only
Before read EDID code, please confirm that the Software DDC only is disabled as shown in Fig. 22.

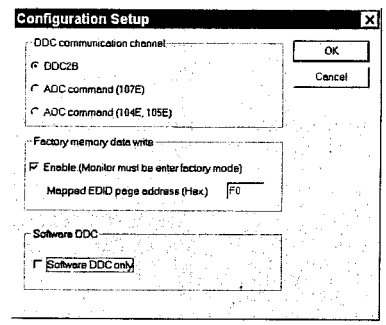


Fig. 22

Note 2 : In Factory Mode: Read/Write DDC data
Before Read/Write EDID code, please confirm that the Software DDC only is enabled as shown in Fig. 23.

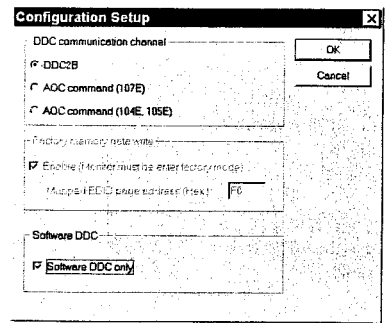


Fig. 23

Hex Data of DDC 1/2B

****
EDID log file
****

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 792B (HEX.)
- ID Serial Number : 7A155 (HEX.)
- Week of Manufacture : 25
- Year of Manufacture : 2000

EDID Version, Revision
- Version : 1
- Revision : 2

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.000V (0.70Vpp)
  without Blank-to-Black Setup
  Separate Sync
  without Composite Sync
  without Sync on Green
  no Serration required
- Maximum H Image Size : 32
- Maximum V Image Size : 24
- Display Transfer Characteristic : 2.85 (gamma)
- Feature Support (DPMS) : Standby
  Suspend
  Active Off
- Display Type : RGB color display

Color Characteristics
- Red X coordinate : 0.625
- Red Y coordinate : 0.34
- Green X coordinate : 0.285
- Green Y coordinate : 0.605
- Blue X coordinate : 0.15
- Blue Y coordinate : 0.065
- White X coordinate : 0.283
- White Y coordinate : 0.297

Established Timings
- Established Timings I : 720 x 400 @70Hz (IBM,VGA)
  640 x 480 @60Hz (IBM,VGA)
  640 x 480 @72Hz (VESA)
  640 x 480 @75Hz (VESA)
  800 x 600 @60Hz (VESA)
- Established Timings II : 800 x 600 @72Hz (VESA)
  800 x 600 @75Hz (VESA)
  832 x 624 @75Hz (Apple,Mac II)
  1024 x 768 @60Hz (VESA)
  1024 x 768 @70Hz (VESA)
  1024 x 768 @75Hz (VESA)
  1280 x 1024 @75Hz (VESA)
- Manufacturer's timings : 1152 x 870 @75Hz (Apple,Mac II)

Standard Timing Identification #1
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #2
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #3
- Horizontal active pixels : 1280
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #4
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 75

Standard Timing Identification #5
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 85

Standard Timing Identification #6
- Horizontal active pixels : 1152
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #7
- Horizontal active pixels : 1600
- Aspect Ratio : 4:3
- Refresh Rate : 70

Standard Timing Identification #8
- Horizontal active pixels : 1920
- Aspect Ratio : 4:3
- Refresh Rate : 60

Detailed Timing #1
- Pixel Clock (MHz) : 43.27
- H Active (pixels) : 640
- H Blanking (pixels) : 192
- V Active (lines) : 480
- V Blanking (lines) : 29
- H Sync Offset (F Porch) (pixels): 56
- H Sync Pulse Width (pixels) : 56
- V Sync Offset (F Porch) (lines) : 1
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 316
- V Image Size (mm) : 237
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Monitor Name : PHILIPS 107B

Monitor Descriptor #3
- Serial Number : TY 500053

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 50
- Max. Vt rate Hz : 160
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 92
- Max. Supported Pixel : 230

Extension Flag : 0
Check sum : 3A (HEX.)

****
EDID data (128 bytes)
****

```
 0: 00   1: ff   2: ff   3: ff   4: ff   5: ff   6: ff   7: 00
 8: 41   9: 0c  10: 2b  11: 79  12: 55  13: a1  14: 07  15: 00
16: 19  17: 0a  18: 01  19: 02  20: 68  21: 20  22: 18  23: b9
24: e8  25: 00  26: b8  27: a0  28: 57  29: 49  30: 9b  31: 26
32: 10  33: 48  34: 4c  35: ad  36: ef  37: 80  38: 45  39: 59
40: 61  41: 59  42: 81  43: 59  44: 81  45: 8f  46: 81  47: 99
48: 71  49: 4f  50: a9  51: 4a  52: d1  53: 40  54: e7  55: 10
56: 80  57: c0  58: 20  59: e0  60: 1d  61: 10  62: 38  63: 38
64: 13  65: 00  66: 3c  67: ed  68: 10  69: 00  70: 00  71: 18
72: 00  73: 00  74: 00  75: fc  76: 00  77: 50  78: 48  79: 49
80: 4c  81: 49  82: 50  83: 53  84: 20  85: 31  86: 30  87: 37
88: 42  89: 0a  90: 00  91: 00  92: 00  93: ff  94: 00  95: 20
96: 54  97: 59  98: 20  99: 20 100: 35 101: 30 102: 30 103: 30
104: 35 105: 33 106: 0a 107: 20 108: 00 109: 00 110: 00 111: fd
112: 00 113: 32 114: a0 115: 1e 116: 5c 117: 17 118: 00 119: 0a
```

Electrical Instructions

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 21046 (GPT-1600).

0.1 This monitor has 35 factory-preset modes as below:

1792 x1334 60 kHz/83.64 Hz	1024 x 768 60 kHz/48.363 Hz
1856 x1392 60 kHz/86.33 Hz	1024 x 768 70 kHz/56.476 Hz
1920 x1440 60 kHz/90 Hz	1024 x 768 75 kHz/60 Hz
640 x 350 70 kHz/31.469 Hz	1024 x 768 84.99 kHz/68.37 Hz
640 x 350 85 kHz/37.861 Hz	1280 x 1024 63.9 kHz/60Hz
640 x 480 100.1kHz/50.6 Hz(SNI)	1152 x 864 75 kHz/67.5 Hz
640 x 480 60 kHz/31.469 Hz	1152 x 864 85 kHz/77.1Hz
640 x 480 72.8 kHz/37.861 Hz	1152 x 870 75 kHz/68.681 Hz
640 x 480 75 kHz/37.5 Hz	1152 x 900 76 kHz/71.8 Hz(SUN)
640 x 480 85 kHz/43.269 Hz	1280 x1024 60kHz/63.98 Hz
720 x 400 70 kHz/31.469 Hz	1280 x1024 75 kHz/79.97 Hz
720 x 400 85 kHz/37.927 Hz	1280 x1024 85 kHz/91.146 Hz
800 x 600 100.1 kHz/63.9 Hz(SNI)	1280 x960 60 kHz/60 Hz
800 x 600 60.3 kHz/37.879 Hz	1280 x960 85 kHz/85.938 Hz
800 x 600 72.12 kHz/48.077 Hz	1600 x1200 60 kHz/75 Hz
800 x 600 75 kHz/46.875 Hz	1600 x1200 65 kHz/81.25 Hz
800 x 600 85 kHz/53.674 Hz	1600 x1200 70 kHz/87.5 Hz
832 x 624 74.6 kHz/493725 Hz(MAC)	

0.2 With normal VGA card:
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.
0.3 AC/DC Measurement:
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".
Power input: 110V AC

1. B+ supply voltage (3165) 79Vdc

- Apply a video signal in the 800 x 600 with 46.9 kHz/75Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Pre-set trimming potentiometer R3165(B+) and R3587(EHT) in mid-position.
- Set Vg2 (screen) to fully Counter-clockwise (zero beamcurrent).
- Connect a dc voltmeter between the joint of C2152 and ground (common ground).
- Set the B+ trimming potentiometer 3165 so that the reading on the dc voltmeter is 190.0 V +/- 0.2 Vdc.

2. High-voltage EHT (3587)

- Apply a video signal in the 1024 x 768 with 68.7 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Turn off the power.
- Connect a "high-voltage voltmeter" between the high-voltage connection of the picture tube and earth.
- Turn on the power.
- Set the EHT trimming potentiometer R3587 so that the "high- voltage voltmeter" reads 26.5 KV +/- 0.2 KV .

- Turn off the power.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.

3. Monitor the following auxiliary voltages.

SOURCE ACROSS C2152	+ 190.0V +/- 0.2VDC.
SOURCE ACROSS C2154	+ 79.0V +/- 1.0VDC.
SOURCE ACROSS C2156	- 6.1V +/- 0.3VDC.
SOURCE ACROSS C2160	+ 13.4V +/- 0.5VDC.
SOURCE ACROSS C2157	- 13.4V +/- 0.5VDC.

4. General conditions for alignment

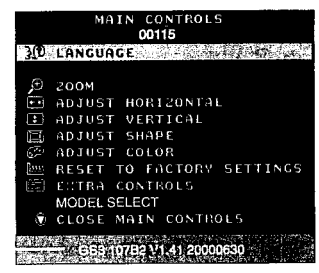
4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.
4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.
4.3 Purity, geometry and subsequent alignments should be carried out in magnetic cage with correct magnetic field.

Northern hemisphere : H=0, V=430+/-50 mG, Z=0
Southern hemisphere : H=0, V=-520+/-50 mG, Z=0

4.4 All voltages are to be measured or applied with respect to ground.
Note: Do not use heatsink as ground.
4.5 Adjust function controls " ◀ ▶ " to center position except for contrast control which should be set to MAX.

5. To access factory mode:

- Turn off monitor (don't turn off PC)
- Press " ◀ " and " ▶ " simultaneously on the front control panel, then press " ⏻ ",wait till the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.



Factory Mode Indicator

- If OSD menu disappears on the screen of monitor, press " ▣ " again (anytime), then the menu comes on the screen again.
- using " ▼ ▲ " : to select OSD menu.
  ◀ ▶ : to increase or decrease the setting.
- Using " ▣ " to confirm the selection.

Electrical Instructions (Continued)

6 To leave factory mode

* After alignment of factory mode, turn off monitor (if you do not turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu goes back to user mode).

7. Alignment of Vg2 cut-off point, white tracking (OSD control)

Equipment : 1. Video Test Generator-801GC (Quantum Data)
2. Color-analyzer (Minolta CA-100)

VG2 [(screen), at the bottom of the L.O.T.].
* Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode,
select the "full white pattern" (sizes 355 x 265 mm).
* Use color-analyzer (Minolta CA-100) to adjust cutoff and white uniformity.

OSD R/G/B cut-off and R/G/B gain can be accessed, with initial data:

9300°K
R cutoff = 40%, R gain = 65% (I^2C)
G cutoff = 40%, G gain = 65% (I^2C)
B cutoff = 40%, B gain = 65% (I^2C)

6500°K
R cutoff = 40%, R gain = 55% (I^2C)
G cutoff = 40%, G gain = 55% (I^2C)
B cutoff = 40%, B gain = 55% (I^2C)

5500°K
R cutoff = 40%, R gain = 55% (I^2C)
G cutoff = 40%, G gain = 55% (I^2C)
B cutoff = 40%, B gain = 55% (I^2C)

Brightness = 50%, Sub-Contrast = 85%, ABL = 70% (I^2C)

Step 1: To select the character "GS3 107B2 V1.41 20000630" as shown in Fig. 2.1, press " ▣ " to access the OSD menu for R/G/B gain & cutoff as shown in Fig. 2.2.
Step 2: Press " ▣ " for function selection as shown in Fig 2.3.
Step 3: Use " ◀ ▶ " to increase or decrease the value as shown in Fig. 2.3.

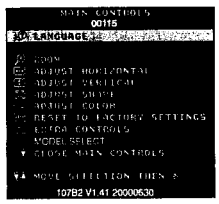


Fig.2.1

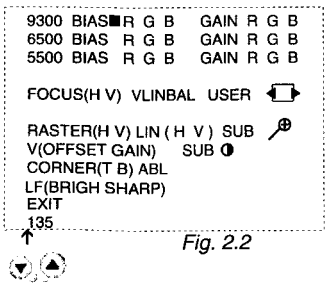

9300 BIAS■R G B GAIN R G B
6500 BIAS R G B GAIN R G B
5500 BIAS R G B GAIN R G B
FOCUS(H V) VLINBAL USER
RASTER(H V) LIN (H V) SUB
V(OFFSET GAIN) SUB ◑
CORNER(T B) ABL
LF(BRIGH SHARP)
EXIT
135

Fig. 2.2

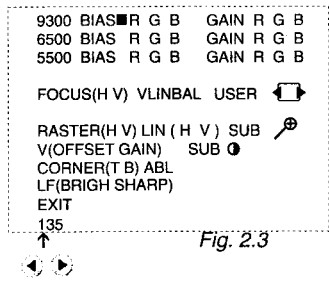
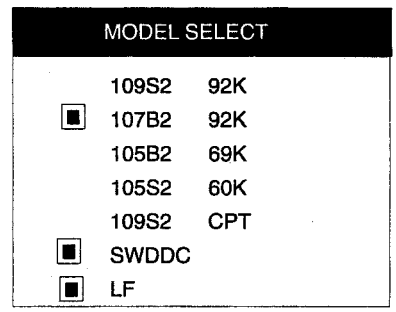

9300 BIAS■R G B GAIN R G B
6500 BIAS R G B GAIN R G B
5500 BIAS R G B GAIN R G B
FOCUS(H V) VLINBAL USER
RASTER(H V) LIN (H V) SUB
V(OFFSET GAIN) SUB ◑
CORNER(T B) ABL
LF(BRIGH SHARP)
EXIT
135

Fig. 2.3

BIAS R G B : R(red) G(green) B(blue) cutoff
GAIN R G B : R(red) G(green) B(blue) gain
V FOCUS : Vertical Focus
H FOCUS : Horizontal Focus
VLIN BAL : Vertical Linearity Balance
USER : Horizontal size range
RASTER H: Horizontal raster Shift
RASTER V: Vertical raster Shift
HLIN : Horizontal Linearity
V LIN : Vertical Linearity
SUB : Zoom Control range
SUB ◑ : Sub Contrast
V OFFSET : Vertical offset
V GAIN : Vertical Gain
ABL : Auto Beam Limit
T CORNER: Corner Correctionof TOP
B CORNER: Corner Correctionof BOTTOM
LF : LightFrame

(Before you make an adjustment of LF's value of intensity or sharp. Please make sure the LF function has enable proerly by entering "Model Select" submenu that will show you it is active or not). A red square near by LF means function active.Refer to the Fig. As below.



After pressing " ◀ ▶ " ,then Press " ▣ "

7.1 Connect the video input, set brightness control at 50% and contrast at minimum position (OSD), Vg2 at Minimum (counter clockwise, and ABL (OSD) at 50% position.
Slowly increase Vg2 voltage until light output is at 0.1 Ft-L +/- 0.01Ft-L (Y=0.1 Ft-L, on the screen of CA-100).

7.2 (The screen of monitor is dark now)
: Press " ▣ " to show the OSD menu as shown in Fig. 2.1.
: Select the character "GS3 107B2 V1.41 20000630" to access the R/G/B adjustment as shown in Fig. 2.2 and Fig. 2.3.
: Adjust the cutoff of R/G/B to get 9300K (x=0.283 +/- 0.015, y=0.297 +/- 0.015), and brightness output at 0.07 +/- 0.01 Ft-L (Y=0.07Ft-L).

7.3 : Press " ◑ " to set contrast at maximum (100%).
: Adjust gain of R/G/B to get 9300K (x=0.283 +/- 0.015, y=0.297 +/-0.015, don't care about the Y value)

7.4 Apply a small white square 10 x 10 cm pattern, brightness set to center (50%), and contrast at maximum (100%), adjust Sub-contrast control (OSD) to reach 41 +/- 1 Ft-L.

7.5 Apply full white pattern at 9300K, adjust ABL (OSD) to reach 30+/- 1 Ft-L (contrast at maximum 100%, brightness at center 50%).

7.6 : Select the 6500K colour temperature as shown in Fig. 2.2.
: Adjust the R/G/B cutoff and R/G/B gain as shown in procedure 7.2~7.3 to get
R/G/B cutoff x= 0.313 +/- 0.015
y= 0.329 +/- 0.015

R/G/B gain x= 0.313 +/- 0.015
y= 0.329 +/- 0.015
Y= 41 +/- 1 Ft-L

7.7 : Select the 5500K colour temperature as shown in Fig. 2.2.
: Adjust the R/G/B cutoff and R/G/B gain as shown in procedure 7.2~7.3 to get
R/G/B cutoff x= 0.332 +/- 0.015
y= 0.347 +/- 0.015

R/G/B gain x= 0.332 +/- 0.015
y= 0.347 +/- 0.015
Y= 33 +/- 1 Ft-L

8. Picture geometry setting (factory pre-set modes)

- Apply a video signal with cross-hatch pattern.
- Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode.
- Set brightness and contrast controls to their center positions (OSD control).

8.1 Horizontal geometry (OSD control)
- Adjust the H-width to 355 mm
- Adjust the H-phase to center position.

8.2 Vertical geometry (OSD control)
- Adjust vertical size to 265 mm
- Adjust V-phase to center position.

8.3 Trapezoid distortion (OSD control)
- Adjust the trapezoid to get optimal vertical lines.

8.4 Pincushion (OSD control)
- Adjust the pincushion to get optimal vertical line.

8.5 Parallelogram (OSD control)
- Adjust parallelogram so that vertical lines are vertical or symmetrically about the center vertical axis.

8.6 Unbalance-pin (OSD control)
- Adjust the unbalance-pin so that that vertical border lines are aligned symmetrically.

8.7 Rotation (OSD control)
- Adjust picture so that vertical tilt is less than +/- 0.5mm.

8.8 Top/Bottom corner(control)
- Adjust the top/bottom corner control to get optimum corner geometry.

8.9 Store the preset results by selecting the "exit" (OSD control).

8.10 Repeat the procedure 8.1 to 8.9 until all the preset timings have been adjusted completely

9. Focus adjustment

: Apply a video signal in the 1600 x 1200 with 93.8 kHz/75 Hz mode
: Select " @ " pattern.
: Set the brightness at center (50%) and the contrast to 25 FL.
: Adjust focus potentiometers (top of L.O.T.) Focus 1 for horizontal focus and Focus 2 for vertical focus so that the picture at 2/3 of the diagonal lines (from center to four corners) of the displayed screen is as sharp as possible.

10. Loading DDC code The DDC HEX data should be written into the DDC IC by EEPROM writer or EDID301.EXE program and Software DDC Alignment Kit.

Electrical Adjustments (Continued)

7.10 Adjust the R,G,B cut-off for all gun reading to get 100 on low brightness scale.
7.11 Set CA100 high R,G,B scale 100 = 41+/- 1FL,X=313,y=329 Adjust G gain at 100 scale on high brightness scale.
7.12 Adjust R,B gain so that blue and green have the same reading as red on the high brightness scale
7.13 Set contrast at minimum and repeat 7.10,7.11,7.12,until RGB three guns get same readings on low and high brightness scale.
7.14 Check full white at contrast and brightness at minimum, the foreground shall be extinguished.

8. Focus adjustment

Apply a signal of " @ " character. at 68.7 kHz/85 Hz mode set the brightness to mid-position , contrast to max - position and adjust the focus for optimal sharpness in the area within 2/3 from the screen center.

9. Loading DDC code

The DDC HEX data should be written into the EEPROM (7803,7804) by EEPROM writer or equivalent method.

a: Service DDC Kit
DDC Module (DDC cable), Part number = 4822 320 12004
DDCV2u.EXE software (3.5" disk), Part number = 4822 711 00024
b: Please refer to Service information 4822 727 21995 for using the Service DDC Kit.

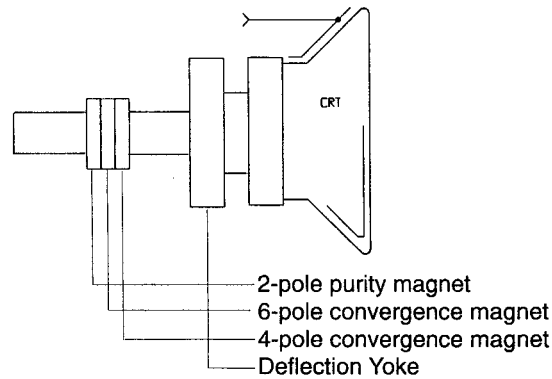
10. Purity adjustment

- Make sure the monitor is not exposed to any external magnetic field.
- Produce a full red pattern on the screen, adjust the purity magnet rings on the PCM assy (on CRT) to obtain a complete field of the color red. This is done by moving the two tabs (2-pole) in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180 degree.
- Check by full green pattern and full blue pattern again to observe their respective color purity.

11. Static convergence

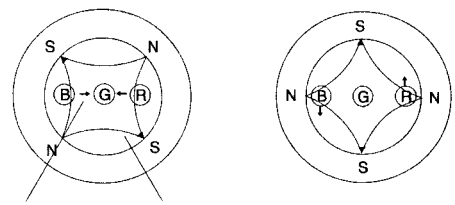
Introduction
Slight deviation in the static convergence can be corrected by using two permanent pairs of magnets which are fitted around the neck of the CRT. These are the 4-pole magnet and the 6-pole magnet.
The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beam (R, B and G) parallel in the opposite direction from the other.
The magnetic field of the above magnets do not affect the center of the CRT neck.

Setting
- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly.
- Signal: 640 * 480, 31.5 kHz/60 Hz mode.
- Set the tabs of the 4-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R and B electron beams.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- Pole magnet again.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- pole magnet again.



4-pole

Beam motion producced by the 4-pole convergence magnet

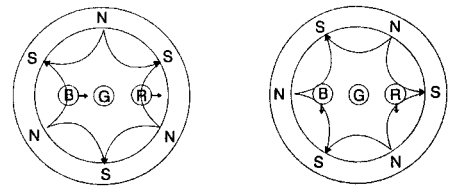


Beam displacement direction

Magnetic flux lines

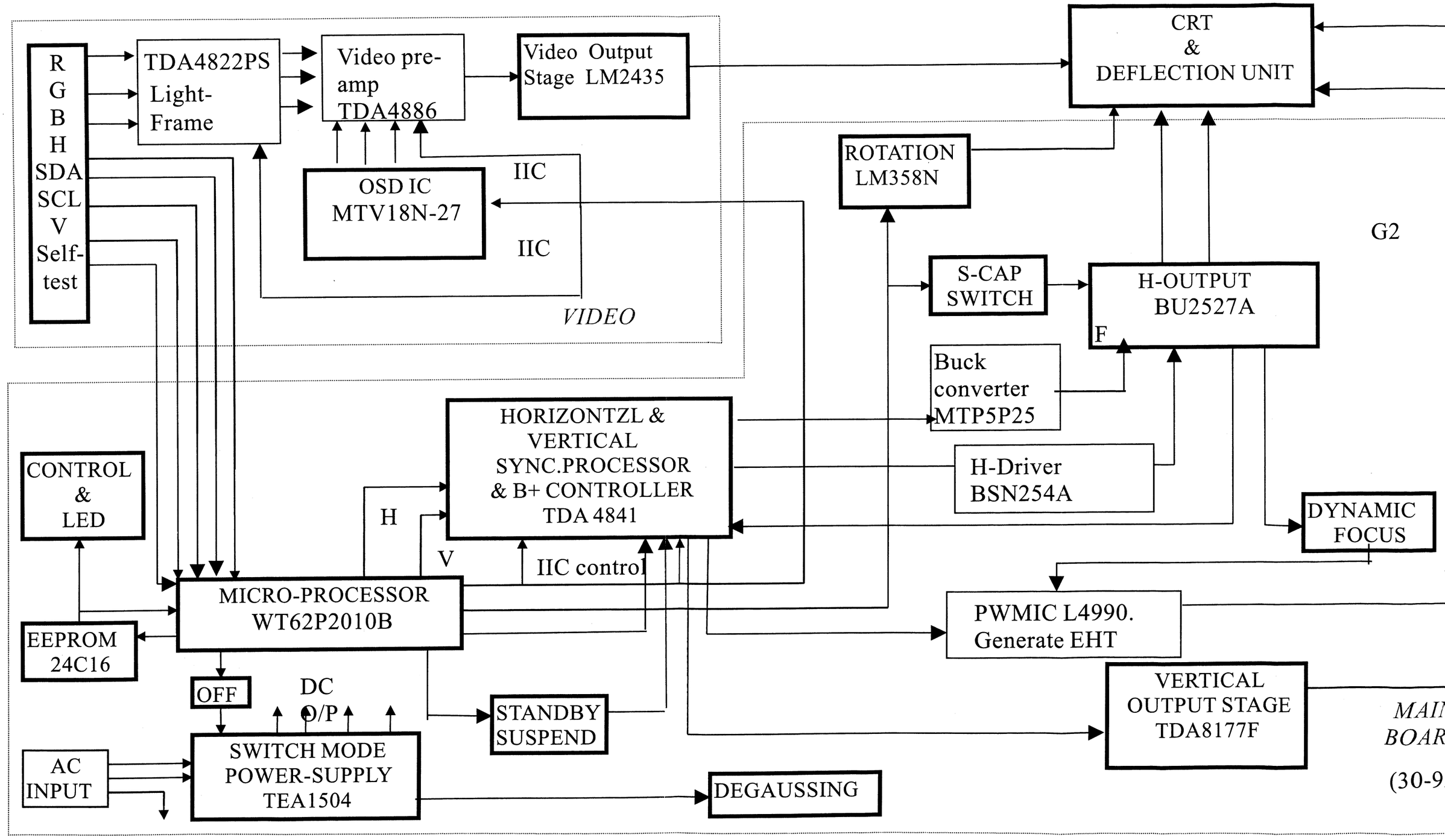
6-pole

Beam motion producced by the 6- pole convergence magnet

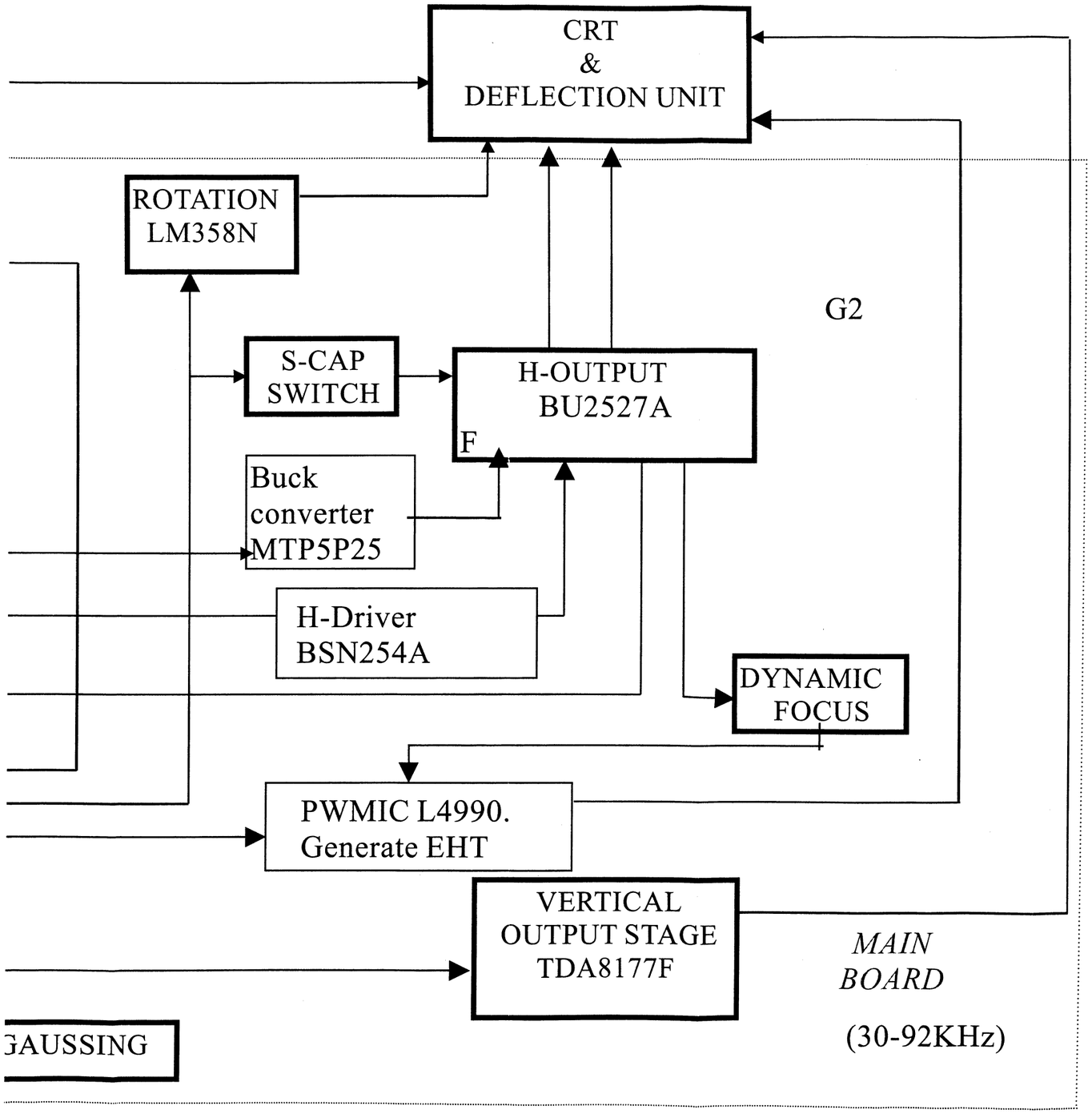


Block Diagram

FUNCTION BLOCK OF 107B2

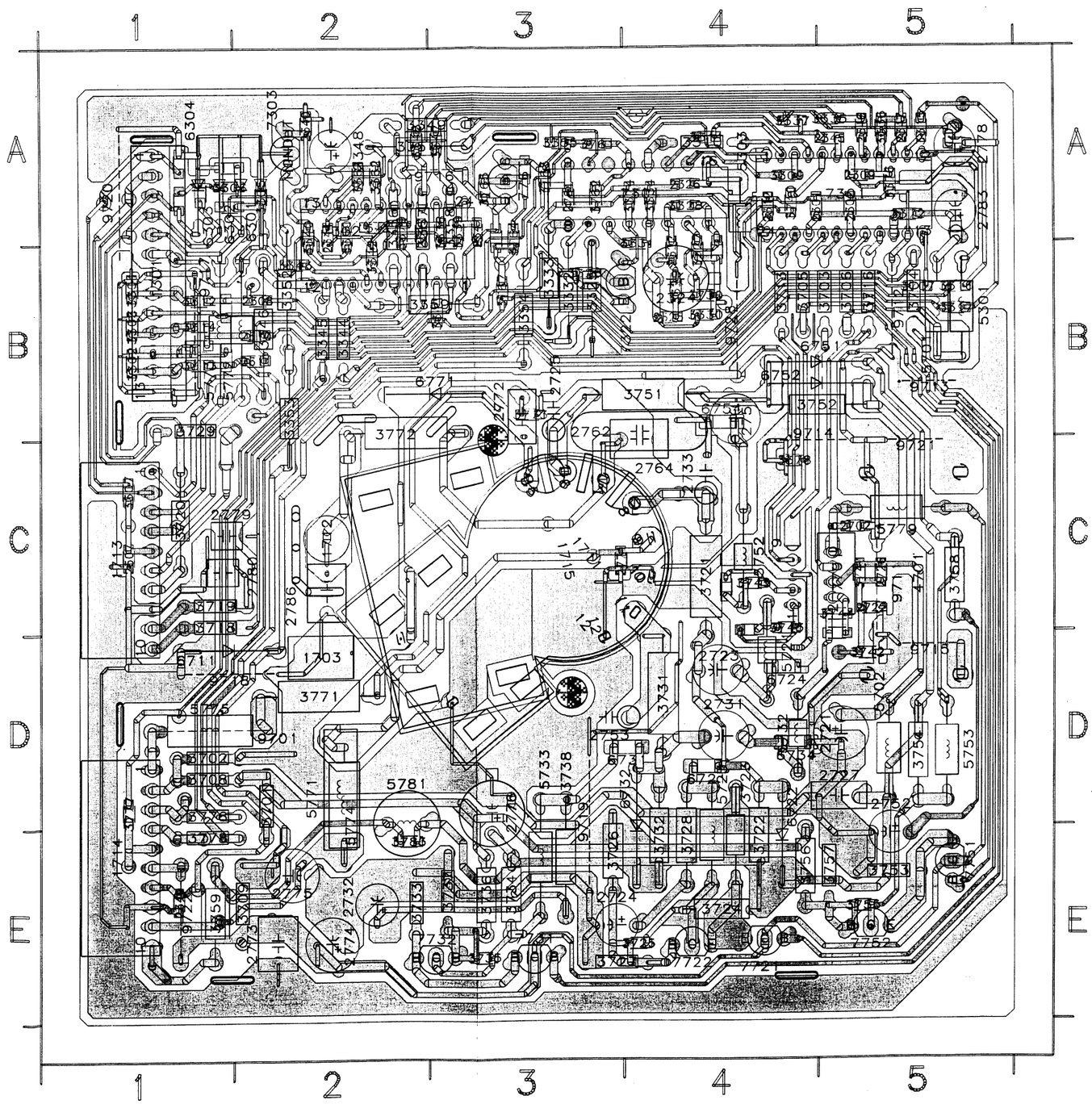


BLOCK OF 107B2



VIDEO PANEL C.B.A.(A)

1.Compoments with mapping_Copper track side view
2.SMD_Copper track side view
3.Copper _Copper track side view



# REF	GRID LABEL	BOARD SIDE
1301	B1	B
1703	D2	B
1711	C3	B
1712	C2	B
1713	C1	B
1714	E1	B
1715	C3	B
2324	B4	B
2348	A2	B
2721	D5	B
2723	D4	B
2724	E3	B
2725	B3	B
2727	D5	B
2731	D4	B
2732	E2	B
2733	C4	B
2751	B4	B
2752	D5	B
2753	D3	B
2762	B3	B
2764	C4	B
2772	B3	B
2773	E2	B
2774	E2	B
2775	E2	B
2776	D3	B
2778	A5	B
2779	C1	B
2780	C2	B
2783	A5	B
2786	C2	B
3310	A4	B
3325	B3	B
3332	B3	B
3333	B3	B
3344	B2	B
3345	B2	B
3346	B2	B
3349	A2	B
3351	A2	B
3352	B2	B
3353	B2	B
3354	B3	B
3356	A2	B
3357	A2	B
3358	A3	B
3359	B2	B
3701	D2	B
3702	D1	B
3703	B5	B
3704	B5	B
3705	B4	B
3706	B5	B
3708	D1	B
3709	E2	B
3713	B4	B
3716	B5	B
3718	C1	B
3719	C1	B
3720	C1	B
3721	C4	B
3722	E4	B
3723	D4	B
3724	E4	B
3726	E3	B
3727	E3	B
3728	E4	B
3729	B1	B
3731	D4	B
3732	E4	B
3733	E2	B
3734	E3	B
3736	E3	B
3737	E3	B
3738	D3	B
3751	B4	B
3752	B4	B
3753	E5	B
3754	D5	B
3756	E4	B
3757	E5	B
3758	C5	B
3759	E1	B
3771	D2	B
3772	B2	B
3776	D1	B
3778	E1	B
4701	C5	B
5301	B5	B
5303	A4	B
5701	B5	B
5702	D5	B
5721	D4	B
5723	D4	B
5732	D4	B
5733	D3	B
5752	C4	B
5753	D5	B
5771	D2	B
5772	B1	B
5773	B1	B
5774	D2	B
5775	D1	B
5779	C5	B
5781	D2	B
6301	A2	B
6302	A1	B
6303	A1	B
6304	A1	B
6711	D1	B
6722	D4	B
6732	D3	B
6751	B5	B
6752	B4	B
6771	B3	B
7301	A5	B
7302	A2	B
7303	A2	B
7304	A4	B
7322	B4	B
7701	C5	B
7721	E4	B
7722	E4	B
7731	E3	B
7732	E3	B
7751	E5	B
7752	E5	B
7761	A3	B
9701	D2	B
9711	C5	B
9712	B5	B
9713	B5	B
9714	B4	B
9715	D5	B
9716	A3	B
9717	B1	B
9718	D1	B
9719	D3	B
9720	A1	B
9721	C5	B
9722	E1	B
9728	B4	B

# SMD LAYER	GRID	BOARD SIDE
2301	A4	A
2302	A5	A
2307	C1	A
2308	B2	A
2309	A5	A
2310	B2	A
2311	B2	A
2312	A4	A
2322	B4	A
2325	B4	A
2326	A4	A
2340	A2	A
2341	A3	A
2342	A2	A
2343	A2	A
2344	A2	A
2345	A5	A
2346	A5	A
2347	A5	A
2349	E1	A
2702	C5	A
2722	C5	A
2726	C5	A
2761	A3	A
2771	C3	A
3301	B1	A
3302	B1	A
3303	B1	A
3305	A2	A
3306	A1	A
3307	C1	A
3309	A4	A
3311	A4	A
3312	B1	A
3313	B1	A
3314	B1	A
3315	A5	A
3316	B5	A
3317	B5	A
3324	A4	A
3326	B3	A
3327	B4	A
3328	A4	A
3329	B4	A
3330	B4	A
3331	A4	A
3334	A4	A
3335	A5	A
3336	A5	A
3337	A4	A
3338	A3	A
3339	A3	A
3340	A2	A
3341	B3	A
3342	B2	A
3343	B2	A
3347	A3	A
3348	A2	A
3350	A2	A
3355	A3	A
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3707	B5	A
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3767	B3	A
3773	B3	A
3777	D1	A
3783	E2	A
6721	D4	A
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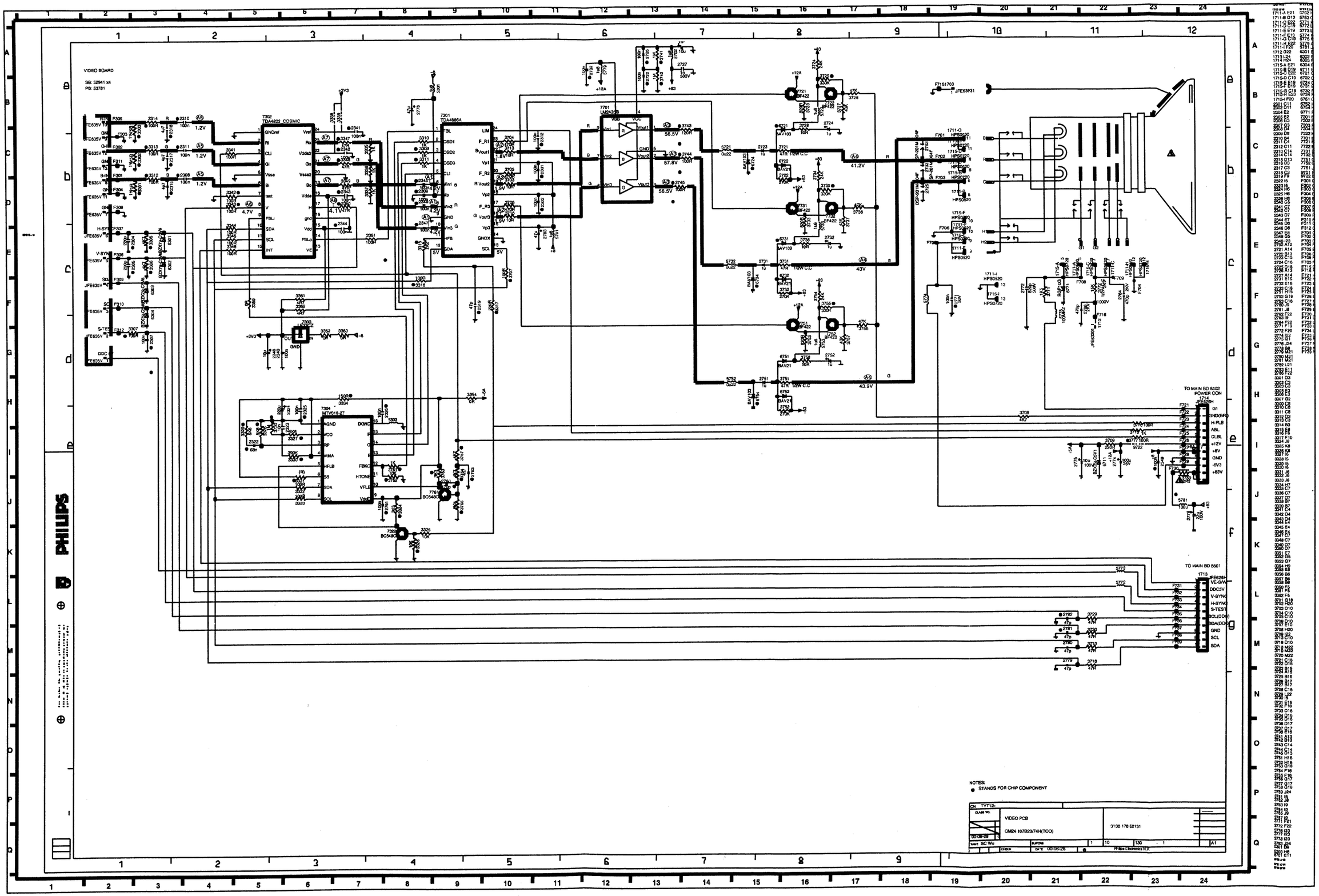
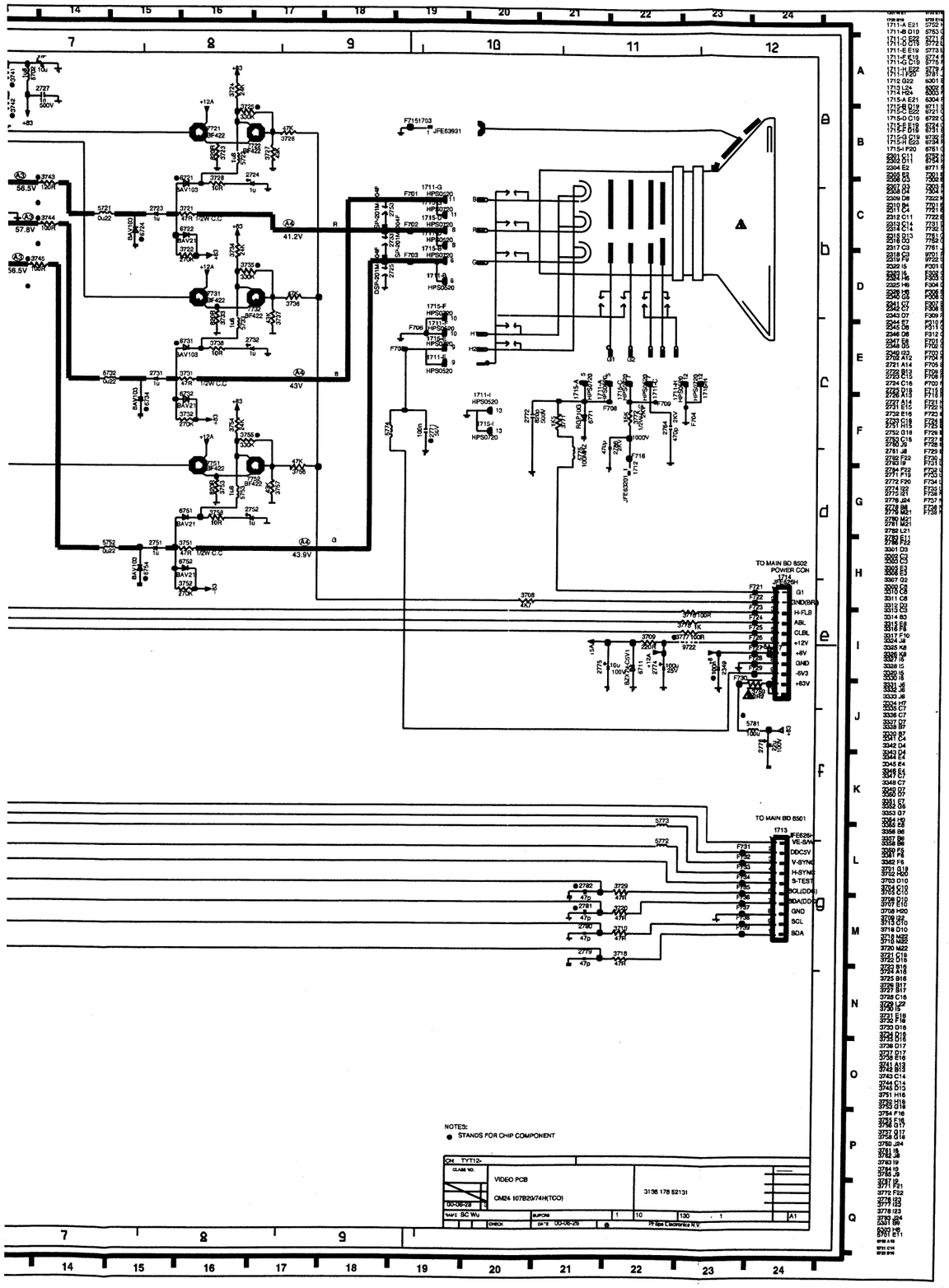
6734	D4	A
6754	B4	A

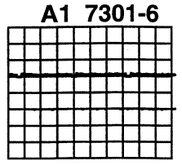
Video Panel (A) Schematic Diagram & Waveforms

A



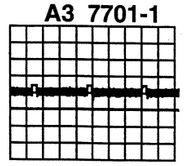


A1 7301-6



2 V/div AC
5 mS/div

A3 7701-1



50 V/div AC
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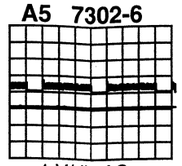
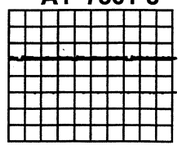
A5 7302-6



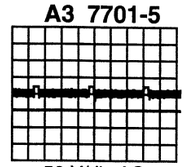
1 V/div AC
5 mS/div

A1 7301-8



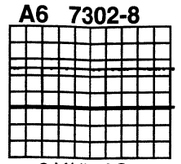
2 V/div AC
5 mS/div

A3 7701-5



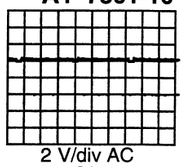
50 V/div AC
5 mS/div

A6 7302-8



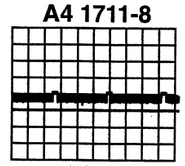
2 V/div AC
5 mS/div

A1 7301-10



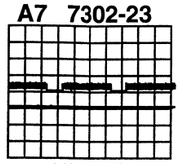
2 V/div AC
5 mS/div

A4 1711-8



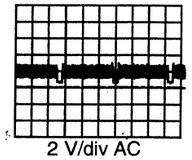
50 V/div AC
5 mS/div

A7 7302-23



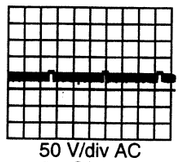
1 V/div AC
5 mS/div

A2 7301-22



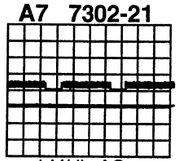
2 V/div AC
5 mS/div

A4 1711-12



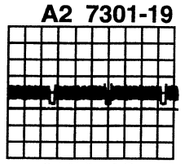
50 V/div AC
5 mS/div

A7 7302-21



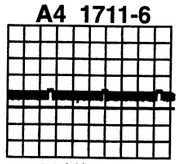
1 V/div AC
5 mS/div

A2 7301-19



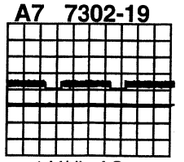
2 V/div AC
5 mS/div

A4 1711-6



50 V/div AC
5 mS/div

A7 7302-19



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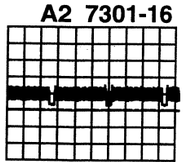
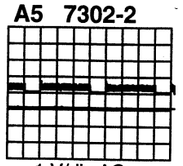
5 mS/div

A2 7301-16



2 V/div AC
5 mS/div

A5 7302-2



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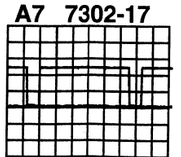
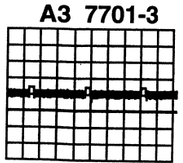
A7 7302-17



2 V/div AC
5 uS/div

A3 7701-3



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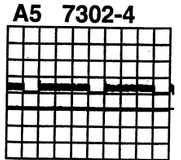
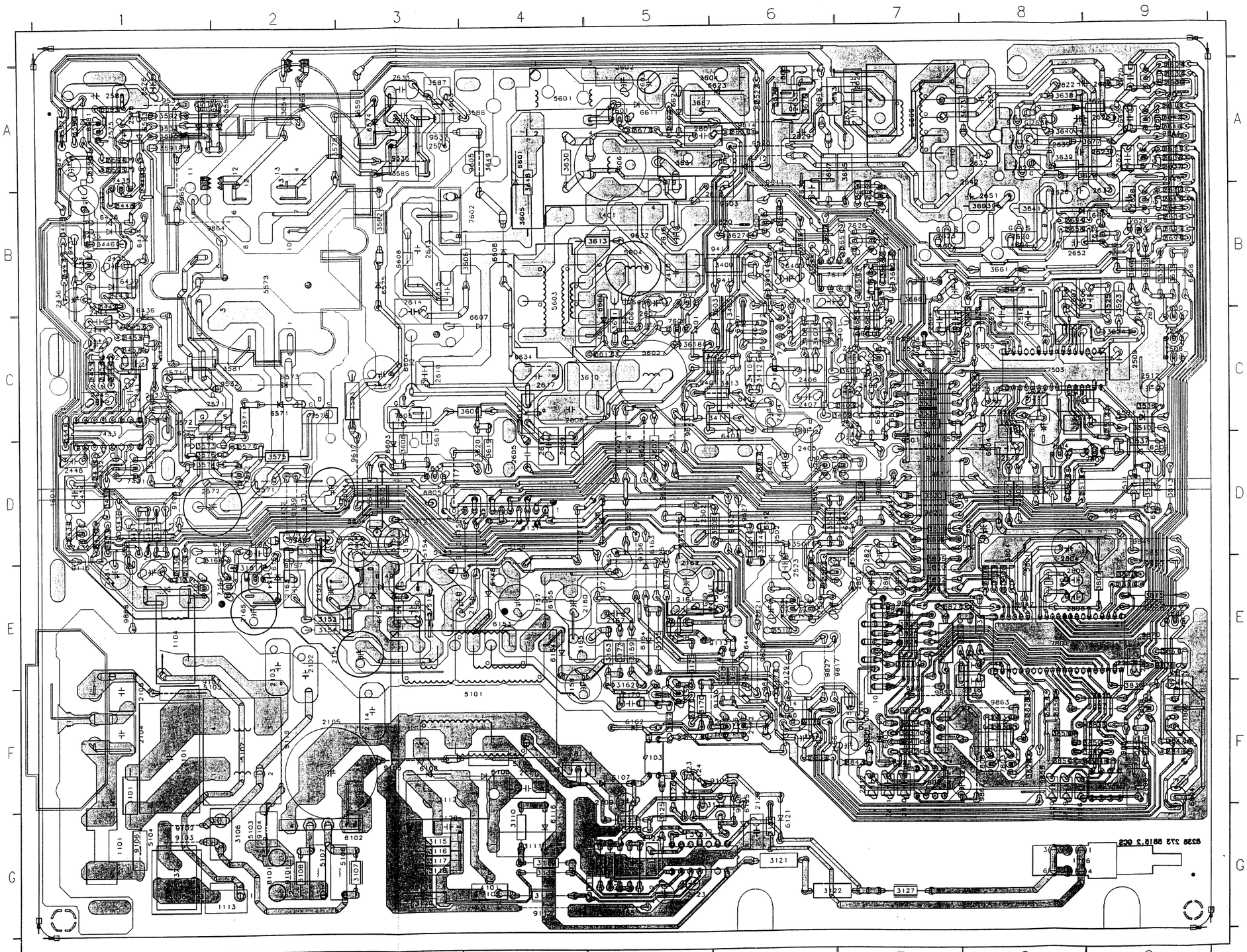
5 mS/div

A5 7302-4



1 V/div AC
5 mS/div

MAIN PANEL C.B.A(B)



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1111	F1	B	2506	B8	B	2646	B6	B	3168			
1113	G2	B	2507	B8	B	2651	B8	B	3170			
1401	B5	B	2508	C8	B	2652	B8	B	3171			
1603	B7	B	2509	C9	B	2801	E7	B	3172			
1605	A6	B	2510	E6	B	2802	E7	B	3173			
1801	E8	B	2511	D9	B	2803	D8	B	3174			
1802	F9	B	2512	C9	B	2804	E8	B	3175			
2101	F1	B	2513	C8	B	2805	E8	B	3176			
2102	E2	B	2514	C8	B	2806	E8	B	3177			
2103	E2	B	2515	C8	B	2808	F9	B	3401			
2104	F1	B	2516	C8	B	2809	F7	B	3402			
2105	F2	B	2518	D8	B	2810	G7	B	3403			
2106	F1	B	2519	C8	B	2811	G7	B	3404			
2109	F5	B	2520	C8	B	2812	F7	B	3405			
2111	F4	B	2521	E6	B	2816	F8	B	3406			
2112	G5	B	2522	D8	B	2817	E8	B	3407			
2114	F3	B	2523	E6	B	2819	G8	B	3408			
2115	D1	B	2525	C7	B	2820	G8	B	3409			
2120	F6	B	2526	A1	B	2821	D7	B	3410			
2122	G5	B	2571	C1	B	2822	F6	B	3411			
2123	G5	B	2572	D1	B	2823	B8	B	3412			
2128	G3	B	2575	A3	B	2824	E9	B	3413			
2150	E3	B	2576	A3	B	2825	E9	B	3415			
2152	E2	B	2577	C3	B	2826	G8	B	3430			
2154	E2	B	2578	A1	B	3101	F1	B	3431			
2156	E4	B	2581	A1	B	3106	G2	B	3432			
2157	E4	B	2582	A1	B	3107	G3	B	3433			
2158	F4	B	2601	A5	B	3108	G2	B	3434			
2160	E4	B	2602	A5	B	3110	G4	B	3435			
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2162	E5	B	2604	D3	B	3112	F3	B	3437			
2163	E2	B	2605	D4	B	3113	G4	B	3438			
2164	D2	B	2606	C4	B	3114	G5	B	3441			
2165	E2	B	2607	C5	B	3115	G3	B	3442			
2166	F6	B	2608	B5	B	3116	G3	B	3443			
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2170	F5	B	2610	C3	B	3118	G3	B	3445			
2172	F6	B	2611	C4	B	3119	G4	B	3446			
2401	C7	B	2612	D4	B	3120	G3	B	3447			
2403	D6	B	2613	B3	B	3121	G6	B	3448			
2404	C6	B	2614	B3	B	3122	G6	B	3449			
2405	D6	B	2615	B3	B	3123	G5	B	3451			
2406	C6	B	2616	B5	B	3124	G6	B	3452			
2407	C6	B	2617	C4	B	3125	G5	B	3453			
2408	C7	B	2618	B6	B	3126	F5	B	3454			
2409	C7	B	2619	A5	B	3127	G7	B	3455			
2410	B5	B	2620	A9	B	3128	G5	B	3501			
2431	E1	B	2621	A9	B	3129	G5	B	3502			
2432	D1	B	2622	A8	B	3130	E1	B	3503			
2433	C1	B	2623	A9	B	3131	G5	B	3504			
2434	D1	B	2624	A7	B	3132	F6	B	3505			
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2436	B1	B	2626	B8	B	3134	G5	B	3507			
2437	B1	B	2627	A7	B	3135	E5	B	3508			
2441	C1	B	2628	B9	B	3137	G1	B	3509			
2442	C1	B	2629	A6	B	3138	G1	B	3510			
2443	B1	B	2630	B6	B	3139	E1	B	3511			
2444	C1	B	2631	C9	B	3151	E3	B	3512			
2445	C1	B	2632	A8	B	3152	E2	B	3513			
2446	D1	B	2633	A3	B	3153	D2	B	3514			
2501	C8	B	2634	A8	B	3154	E2	B	3515			
2502	D5	B	2635	A6	B	3156	E6	B	3516			
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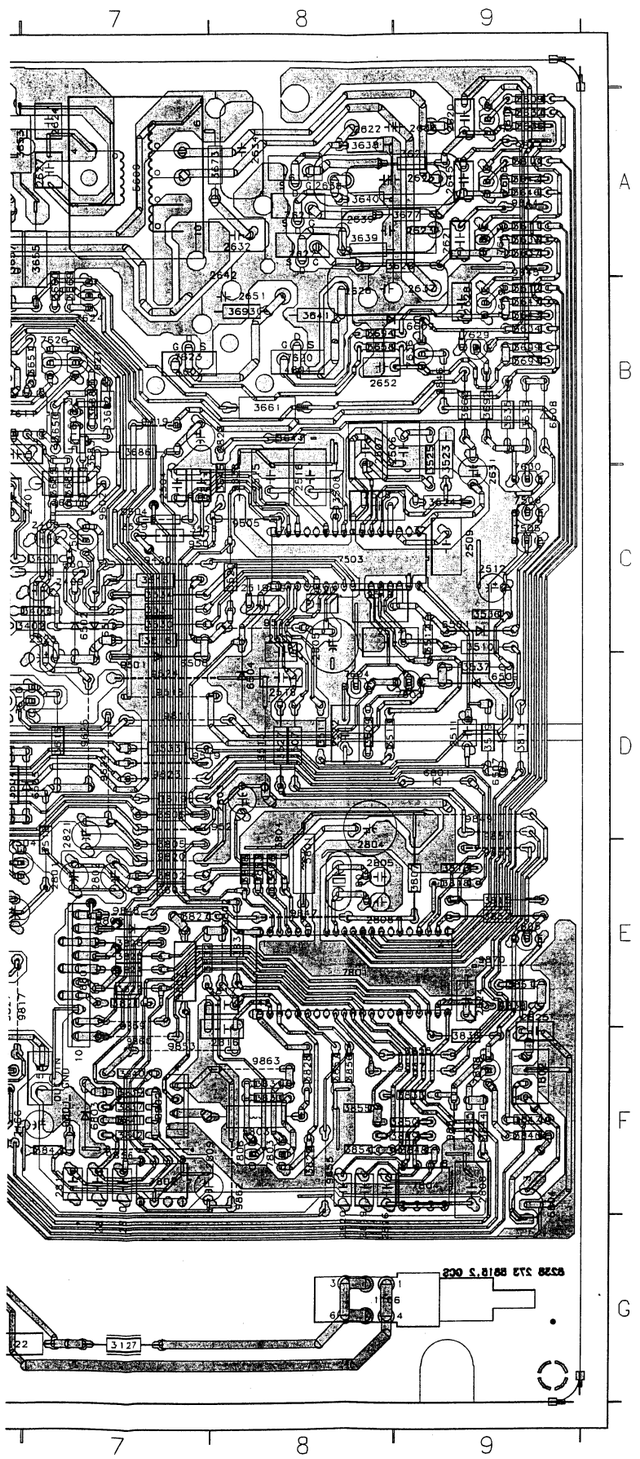

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SIDE	
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1106	G8	B
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1113	G2	B
1401	B5	B
1603	B7	B
1605	A6	B
1801	E8	B
1802	F9	B
2101	F1	B
2102	E2	B
2103	E2	B
2104	F1	B
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2165	E2	B
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2167	E5	B
2170	F5	B
2172	F6	B
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6575	B3	B
6581	A1	B
6582	A2	B
6583	A1	B
6584	A2	B
6585	A1	B
6601	A4	B
6603	D3	B
6604	C3	B
6605	B5	B
6606	C5	B
6607	C4	B
6608	B4	B
6609	B9	B
6610	A6	B
6611	A5	B
6623	A6	B
6624	A5	B
6801	D9	B
6802	E7	B
6803	F7	B
6804	F9	B
7102	E1	B
7103	F5	B
7105	G4	B
7106	G5	B
7113	F5	B
7152	E6	B
7153	F7	B
7154	E2	B
7155	E2	B
7156	F6	B
7157	F6	B
7158	E5	B
7159	F5	B
7404	C6	B
7431	D1	B
7432	D1	B
7433	C1	B
7434	B1	B
7435	A1	B
7501	E6	B
7502	E6	B
7503	C8	B
7504	E6	B
7505	C9	B
7506	C9	B
7507	C7	B
7571	C2	B
7572	D2	B
7573	C2	B
7575	A1	B
7601	A5	B
7602	B4	B
7603	D9	B
7604	D8	B
7605	C3	B
7606	C5	B
7607	B5	B
7608	D6	B
7609	B6	B
7610	D6	B
7611	B6	B
7612	A9	B
7613	A9	B
7615	A8	B
7618	A9	B
7619	B9	B
7620	B8	B
7621	A8	B
7622	A8	B
7623	B7	B
7624	B7	B
7626	B7	B
7627	B7	B
7629	B9	B
7630	C9	B
7631	D3	B
7636	B9	B
7801	E8	B
7802	F7	B
7803	F8	B
7804	F9	B
7805	E9	B
7806	F8	B
7808	F9	B
8101	G2	B
8114	F4	B
8601	D4	B
8801	E7	B
8802	F7	B
8804	D3	B
8805	D3	B
9101	G2	B
9102	G1	B
9103	G1	B
9104	G2	B
9105	F3	B
9106	G1	B
9107	E1	B
9108	F6	B
9109	F6	B
9110	D3	B
9112	G4	B
9113	E6	B
9114	F6	B
9116	E1	B
9117	D3	B
9119	F2	B
9120	D2	B
9121	D4	B
9122	D5	B
9123	D3	B
9124	D4	B
9125	D5	B
9127	E5	B
9128	D1	B
9129	E6	B
9130	F6	B
9131	D4	B
9132	D2	B
9133	D5	B
9134	D5	B
9136	D5	B
9138	F6	B
9139	D2	B
9401	C5	B
9411	B6	B
9412	A6	B
9413	B6	B
9414	D5	B
9416	B6	B
9417	C6	B
9419	B7	B
9420	C7	B
9421	D5	B
9501	D7	B
9502	D6	B
9503	C7	B
9504	C7	B
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9513	D8	B
9515	D6	B
9516	D7	B
9519	D7	B
9520	A6	B
9521	D8	B
9523	C8	B
9524	D7	B
9531	A1	B
9532	C2	B
9533	A1	B
9535	C1	B
9536	A3	B
9537	A3	B
9602	C7	B
9603	B6	B
9605	A4	B
9611	A6	B
9612	A6	B
9614	A6	B
9617	D3	B
9620	B6	B
9623	C5	B
9624	D7	B
9625	D7	B
9626	D5	B
9627	D6	B
9628	E6	B
9631	D5	B
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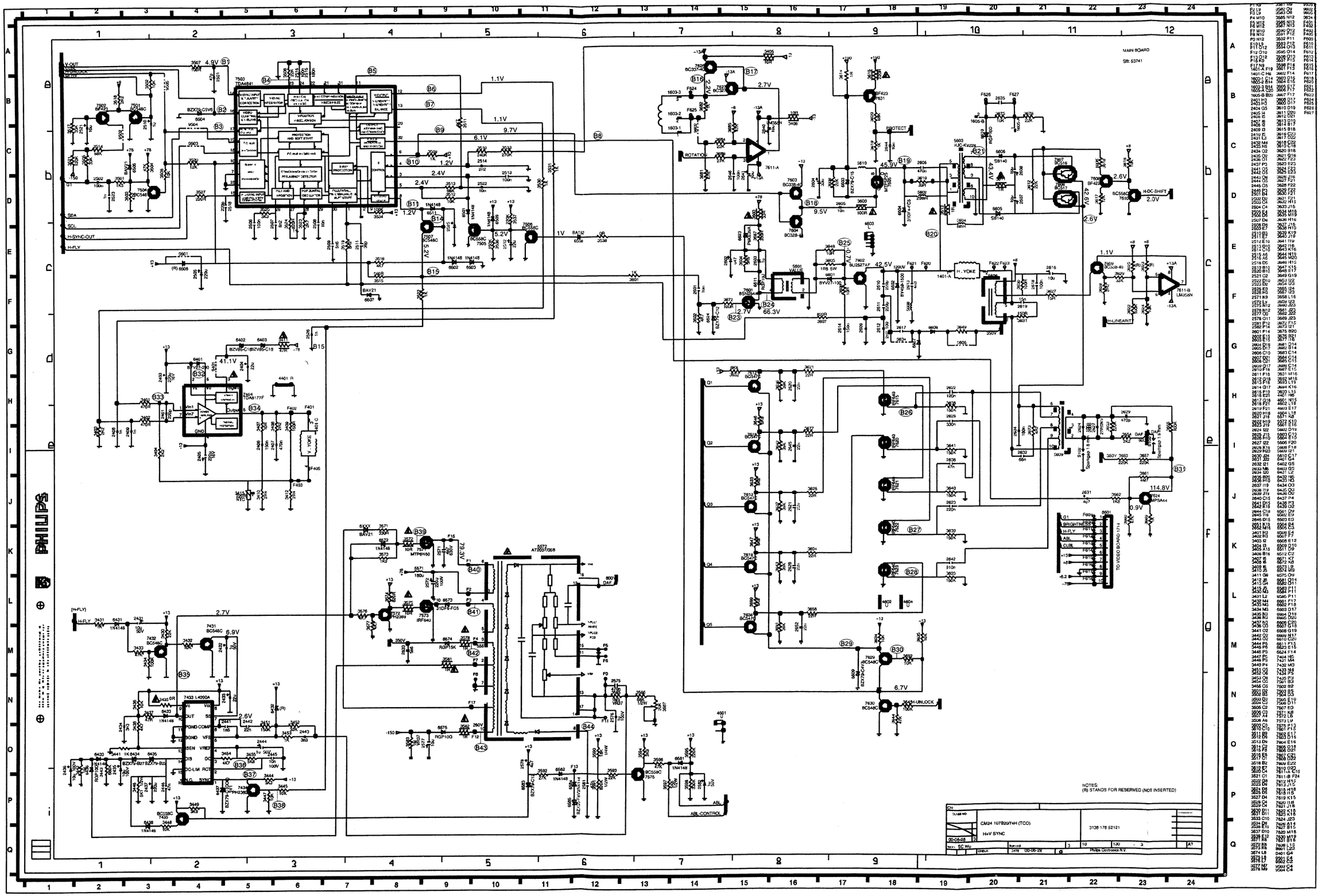
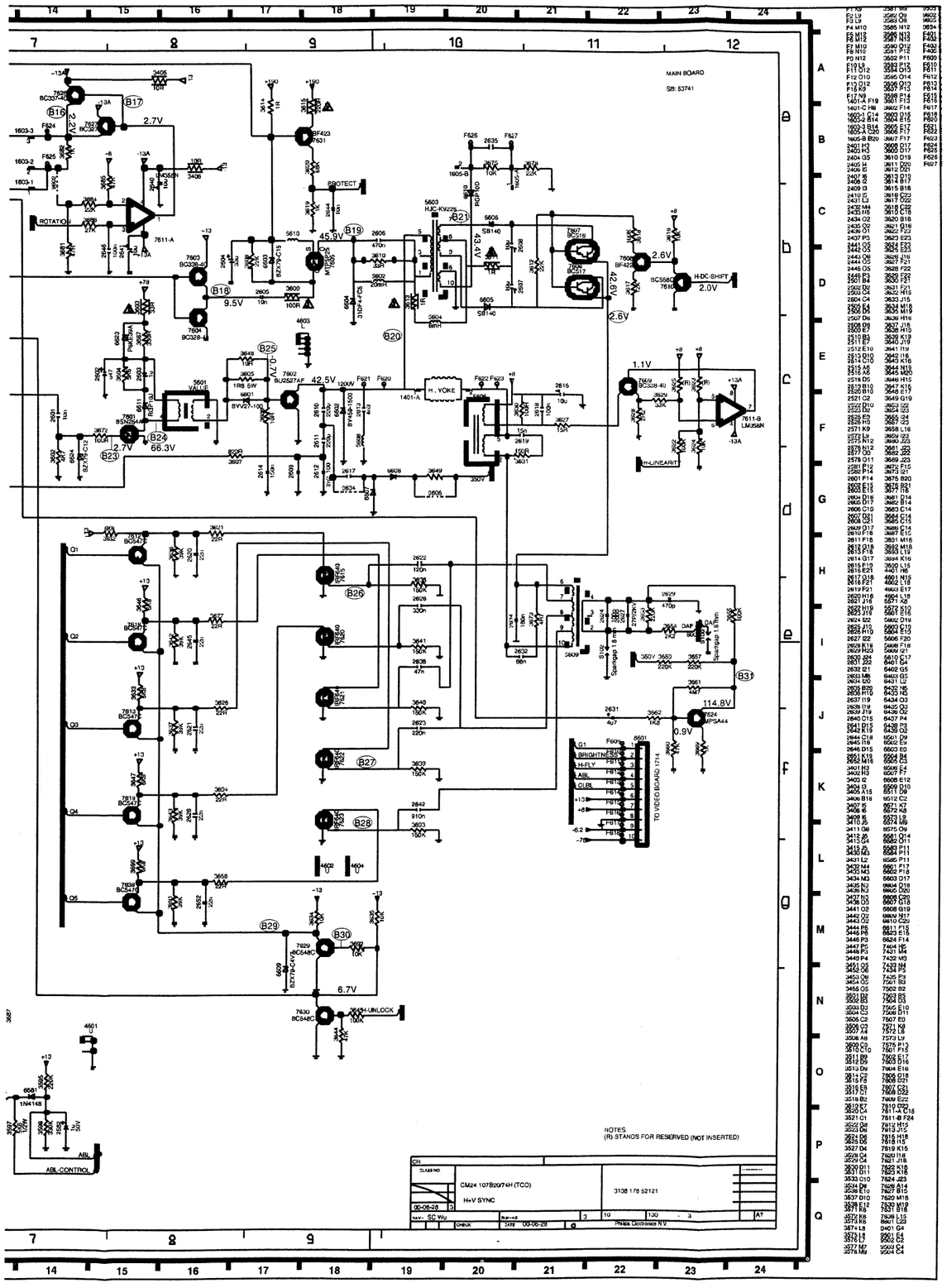
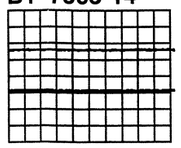
9817	E6	B
9820	E7	B
9823	D7	B
9827	E6	B
9838	C8	B
9840	G5	B
9841	E6	B
9843	A9	B
9844	A9	B
9845	A9	B
9846	B9	B
9847	E8	B
9848	E7	B
9849	D9	B
9850	E9	B
9851	D9	B
9853	F7	B
9854	F9	B
9855	F8	B
9856	F7	B
9857	F9	B
9858	F9	B
9859	E7	B
9860	F7	B
9862	F8	B
9863	F8	B
9864	B2	B
9865	B1	B
9866	A2	B
9867	D1	B
9868	E1	B
9869	C6	B
9870	E9	B

Deflection (B1) Schematic Diagram & Waveforms

B1


MAIN BOARD
SR: 53741
TDA4841
BZV85-C1/BZV85-C19
TDA8177F
L4960A
L4960A
BU2527AF
BYV27-100
BYV42-150
BZX79-C15
BZX79-C6V8
BZX79-B27
BZX79-B2
MTP8N50
IRF840
RGP15K
RGP10G
AT2097/05/B
BC548C
BC558C
BC328-40
BC547B
BC547C
BC338-40
BC516
BF423
BF422
BC548B
BC546C
BC546B
BC557B
BC558B
BC558C
BC548-UNLOCK
BC548C
BC548C
BC548C



B1 7503-14

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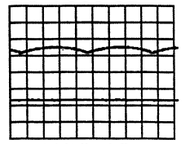
5 mS/div

B8 7503-32

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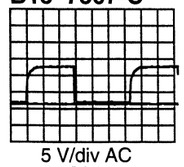
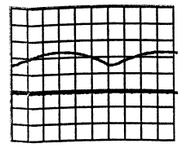
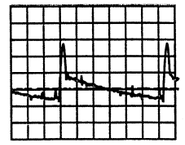
2 mS/div

B15 7507-C

5 V/div AC
5 uS/div

B22 7606-E

20 V/div AC
5 uS/div

B29 7629-C

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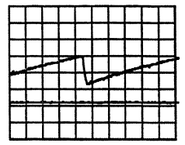
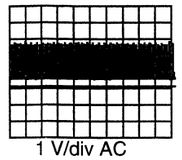
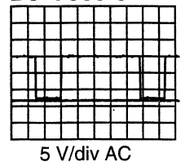
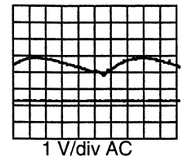
5 uS/div

B36 7433-2

1 V/div AC
5 uS/div

B2 7503-16

1 V/div AC
5 mS/div

B9 7503-6

5 V/div AC
5 uS/div

B16 7626-E

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5 uS/div

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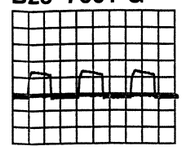
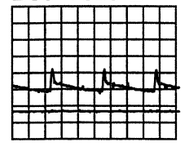
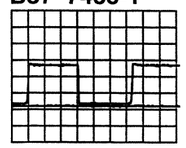

20 V/div AC
5 uS/div

B30 7629-B

0.5 V/div AC
10 uS/div

B37 7433-1

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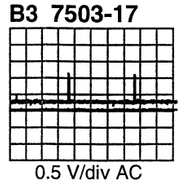
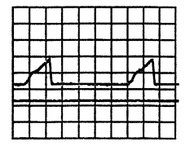
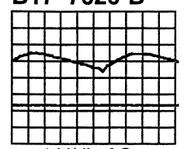
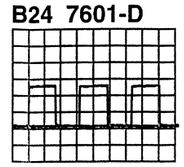
5 uS/div

B3 7503-17

0.5 V/div AC
5 mS/div

B10 7503-4

1 V/div AC
5 uS/div

B17 7626-B

1 V/div AC
5 uS/div

B24 7601-D

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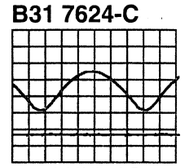
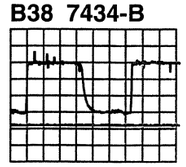
10 uS/div

B31 7624-C

50 V/div AC
5 uS/div

B38 7434-B

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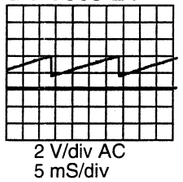
5 uS/div

B4 7503-24

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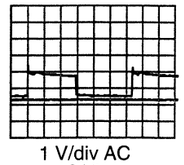
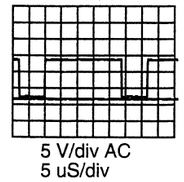
5 mS/div

B11 7503-11

1 V/div AC
5 uS/div

B18 7603-E

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5 uS/div

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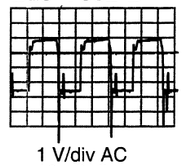
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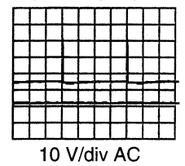
10 uS/div

B32 7404-6

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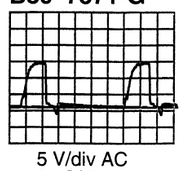
5 mS/div

B39 7571-G

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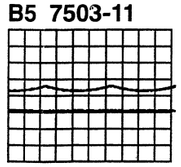
5 uS/div

B5 7503-11

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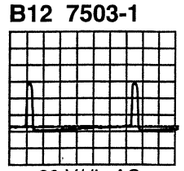
5 mS/div

B12 7503-1

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5 uS/div

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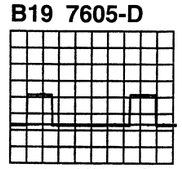
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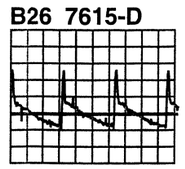
5 uS/div

B26 7615-D

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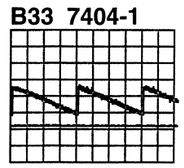
10 uS/div

B33 7404-1

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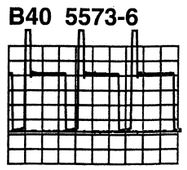
5 mS/div

B40 5573-6

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10 uS/div

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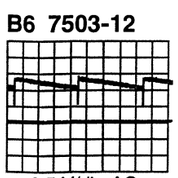
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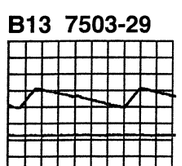
B13 7503-29

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5 uS/div

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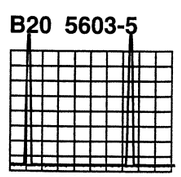
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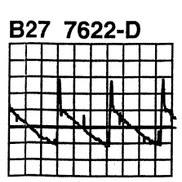
5 uS/div

B27 7622-D

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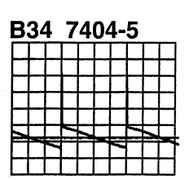
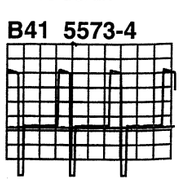
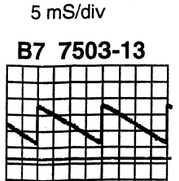
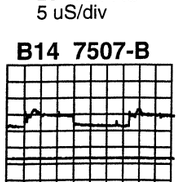
10 uS/div

B34 7404-5

10 V/div AC
5 mS/div

B41 5573-4

20 V/div AC
10 uS/div

B7 7503-13

0.5 V/div AC
5 mS/div

B14 7507-B

0.5 V/div AC
5 mS/div

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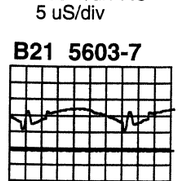
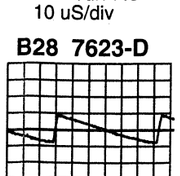
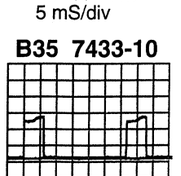
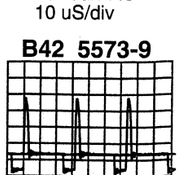

20 V/div AC
5 uS/div

B28 7623-D

1 V/div AC
5 uS/div

B35 7433-10

5 V/div AC
5 uS/div

B42 5573-9

100 V/div AC
10 uS/div

CPU(B2) Schematic Diagram &Waveforms

B2

MAIN BOARS

SB: 53741

(FOR USB NO USE)

JFE3909V 9802

+5

7801 WT62P1

D+ PWM2 PWM1 PWM0 RESET /SV3 VDD GND OSCO OSCI PB5 /SDA2 PB4 /SCL2 PB3 /PAT PB2 PB1 /HF1 PB0 /HF0 IRQ PC7 /SCKIN PC6 PC5 PC4 PC3 /AD3

D- VIN HIN PWMB PD5 /PWM4 PD4 /PWM5 PD3 /PWM6 PD2 /PWM7 PD1 /HOUT PD0 /VOUT PA7 /PWM13 /CLAMP PA6 /PWM12 PA5 /PWM11 PA4 /PWM10 PA3 /PWM9 PA2 /PWM8 PA1 /SCL1 PA0 /SDA1 PC0 /AD0 PC1 /AD1 PC2 /AD2

H-DC-SHIFT ABL-CONTROL H-LINEARITY

VIDEO-ENCHANCE H+V H-UNLOCK MUTE OFF

V-SYNC-IN H-SYNC-IN

9801 4K7

MODE SCL SDA ROTATION BRIGHTNESS KEY H-SYNC-OUT V-OUT SDA SCL MODE STBY DDC-SCL DDC-SDA SELF-TEST KEY DEGAUSS

7804 M24C08-BN6 (VCC E0 WC E1 SCL E2 SDA VSS)

KEY STBY OFF

BC558C 7806 BC548C 7805

6804 L-59YGC

PD-OFF-B

TO KEY CTRL BD 8881

8801

SDA SCL DDC-SDA DDC-SCL SELF-TEST H-SYNC-IN V-SYNC-IN +5A VIDEO-ENCHANCE

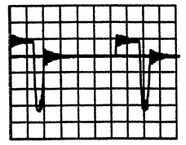
TO VIDEO BD 1713

JFE3309V

NOTES:
(R) STANDS FOR RESERVED (NOT INSERTED)

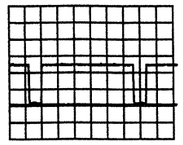
CN:			
CLASS NO.	CM24 107B20/74H (TCO) WT CPU		3136 178 52121
00-06-28 3			
NAME SC Wu	SUPER8	3 10 130 - 2	A2
CHECK	DATE 00-06-28	© Philips Electronics N.V.	

B43 5573-10



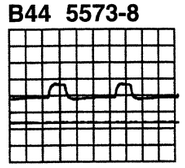
50 V/div AC
5 uS/div

B50 7801-40



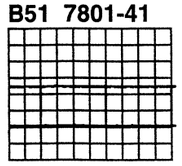
2 V/div AC
5 uS/div

B44 5573-8



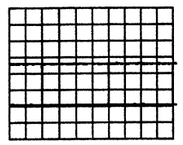
5 V/div AC
5 mS/div

B51 7801-41



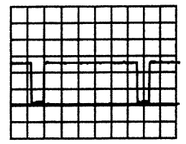
2 V/div AC
5 mS/div

B46 7801-33



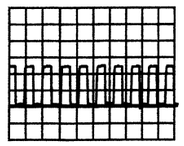
2 V/div AC
5 mS/div

B47 7801-34



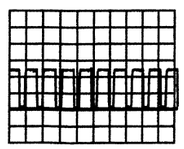
2 V/div AC
5 uS/div

B48 7801-37



2 V/div AC
5 uS/div

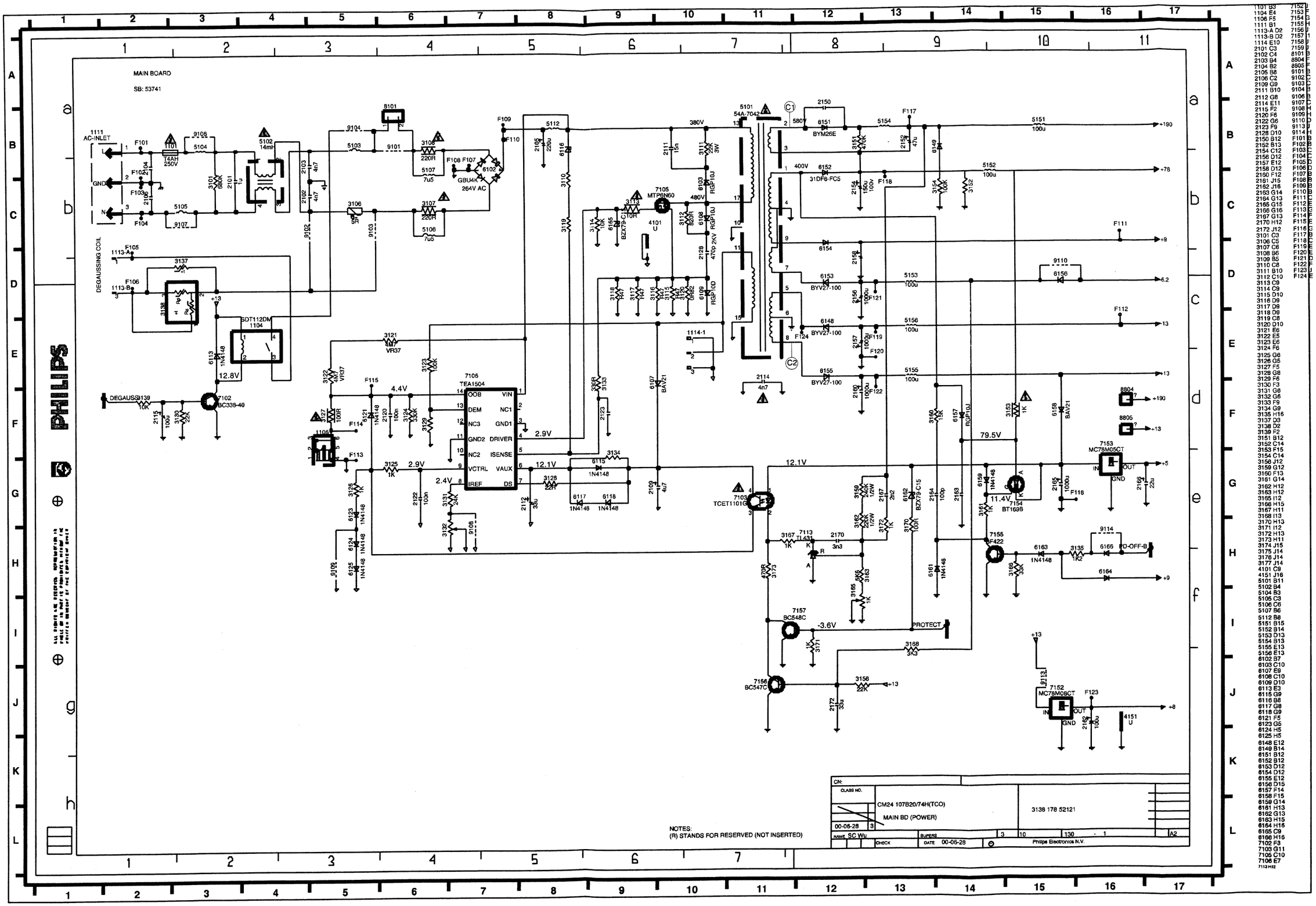
B49 7801-38

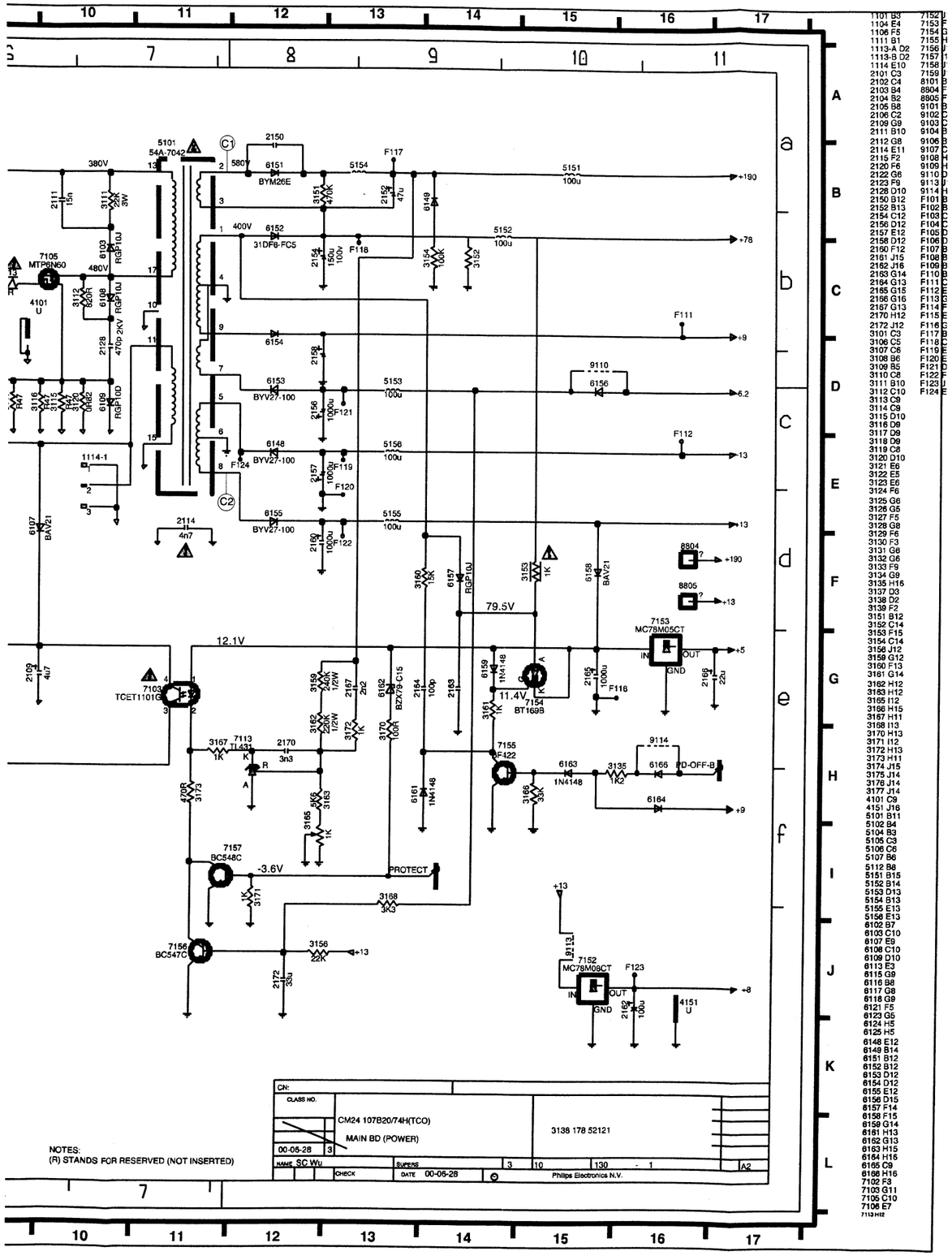


2 V/div AC
5 uS/div

Power Supply (C) schematic Diagram&Waveforms

C





1101 B3 7152 J
1104 E4 7153 F
1106 F5 7154 G
1111 B1 7155 H
1113-A D2 7156 J
1113-B D2 7157 I
1114 E10 7158 J
2101 C3 7159 J
2102 C4 8101 B
2103 B4 8804 F
2104 B2 8805 F
2105 B8 9101 B
2106 C2 9102 C
2109 G9 9103 C
2111 B10 9104 B
2112 G8 9106 B
2114 E11 9107 C
2115 F2 9108 H
2120 F6 9109 H
2122 G6 9110 D
2123 F9 9113 J
2128 D10 9114 H
2150 B12 F101 B
2152 B13 F102 B
2154 C12 F103 C
2156 D12 F104 C
2157 E12 F105 D
2158 D12 F106 D
2160 F12 F107 B
2161 J15 F108 B
2162 J16 F109 B
2163 G14 F110 B
2164 G13 F111 C
2165 G15 F112 E
2166 G16 F113 G
2167 G13 F114 F
2170 H12 F115 E
2172 J12 F116 G
3101 C3 F117 B
3106 C5 F118 C
3107 C6 F119 E
3108 B6 F120 E
3109 B5 F121 D
3110 C8 F122 F
3111 B10 F123 J
3112 C10 F124 E
3113 C9
3114 C8
3115 D10
3116 D9
3117 D9
3118 D9
3119 C8
3120 D10
3121 E6
3122 E5
3123 E6
3124 F6
3125 G6
3126 G5
3127 F5
3128 G8
3129 F6
3130 F3
3131 G6
3132 G6
3133 F9
3134 G9
3135 H15
3137 D3
3138 D2
3139 F2
3151 B12
3152 C14
3153 F15
3154 C14
3156 J12
3159 G12
3160 F13
3161 G14
3162 H12
3163 H12
3165 I12
3166 H15
3167 H11
3168 I13
3170 H13
3171 I12
3172 H13
3173 H11
3174 J15
3175 J14
3176 J14
3177 J14
4101 C9
4151 J16
5101 B11
5102 B4
5104 B3
5105 C3
5106 C6
5107 B6
5112 B8
5151 B15
5152 B14
5153 D13
5154 B13
5155 E13
5156 E13
6102 B7
6103 C10
6107 E9
6108 C10
6109 D10
6113 E3
6115 G9
6116 B8
6117 G8
6118 G9
6121 F5
6123 G5
6124 H5
6125 H5
6148 E12
6149 B14
6151 B12
6152 B12
6153 D12
6154 D12
6155 E12
6156 D15
6157 F14
6158 F15
6159 G14
6161 H13
6162 G13
6163 H15
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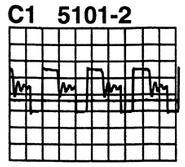
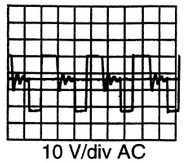
7103 G11
7105 C10
7106 E7
7113 H12

C1 5101-2



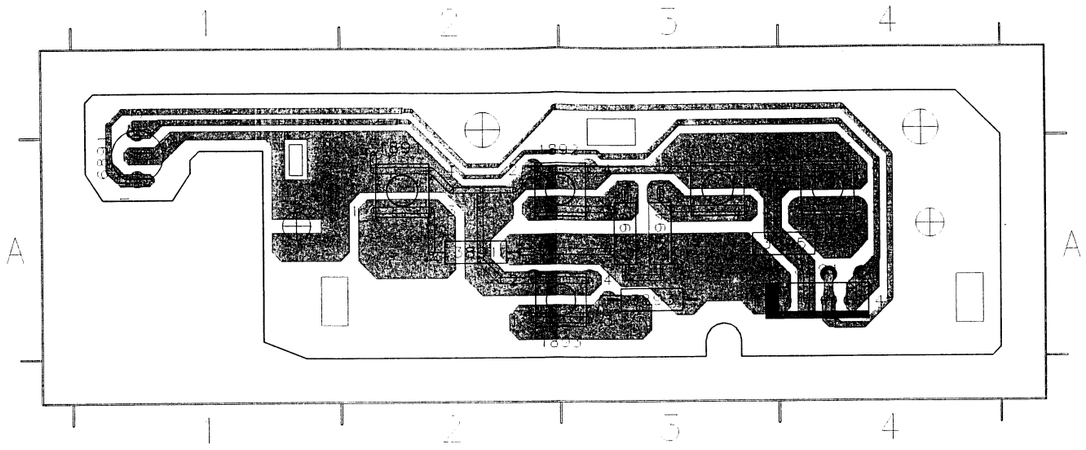
100 V/div AC
5 uS/div

C2 5101-8



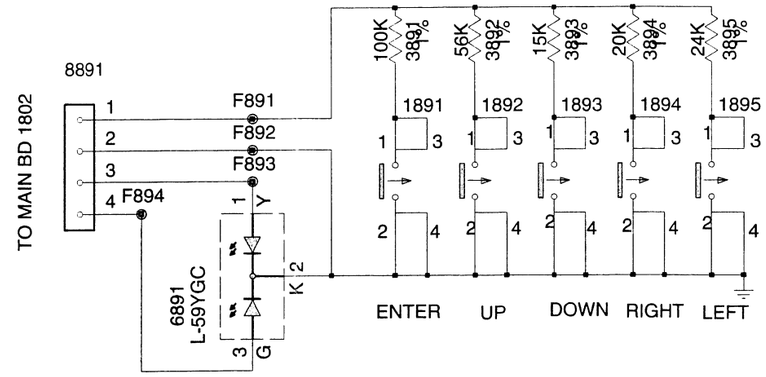
10 V/div AC
5 uS/div

Control panel Schematic Diagram & C.B.A



KEY CONTROL BOARD

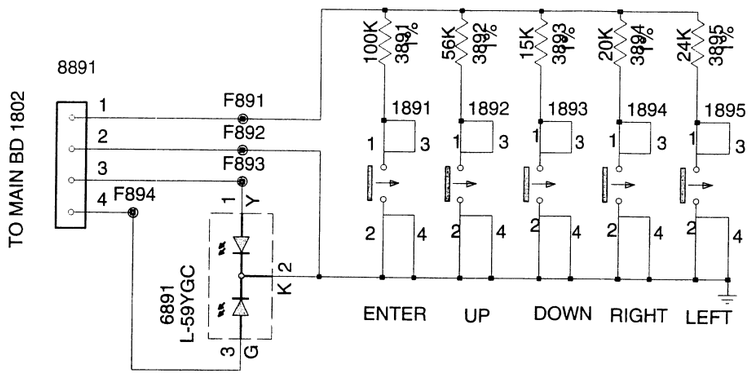
SB: 5218 (12x)
PB: 52191



A

KEY CONTROL BOARD

SB: 5218 (12x)
PB: 52191



1891C
1892C
1893C
1894C
1895C
3891C
3892C
3893C
3894C
3895C
6891D
8891C
F891C
F892D
F893D
F894D

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

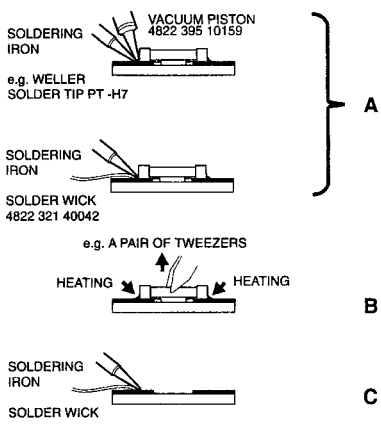
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

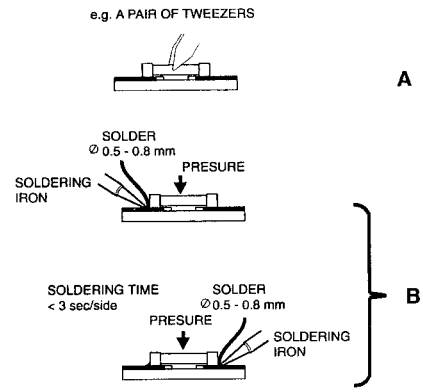
1.3 Caution on removal

- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fiq. 2B).

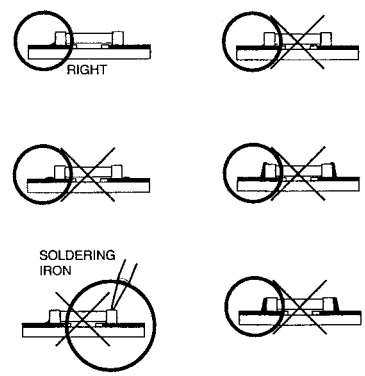
Fig. 2 MOUNTING



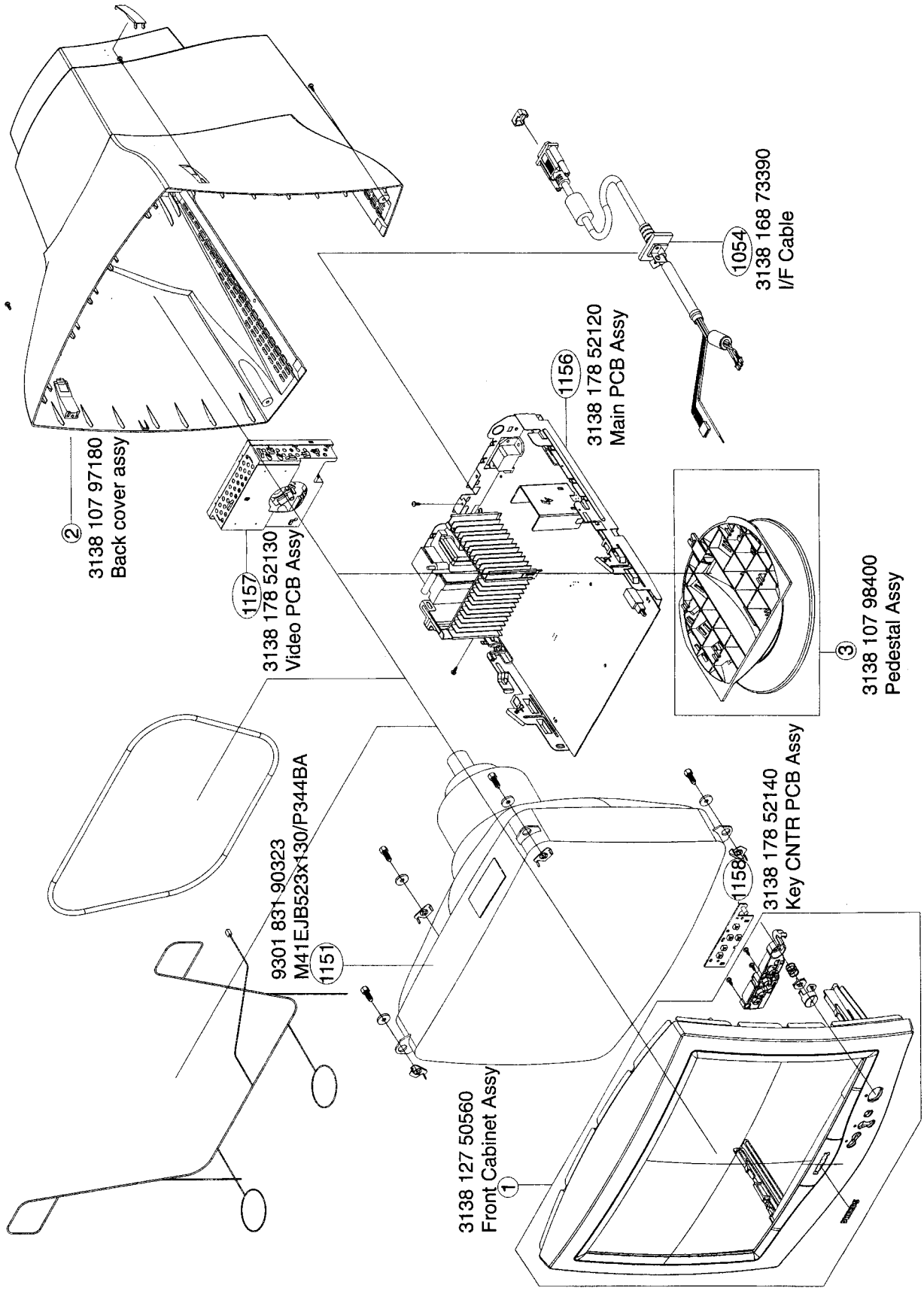
2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



Exploded view



Model : 107B20/74H

Recommanded Parts List

Model : 107B20/74H

ITEM	CODE	NUM	BER	DESCRIPT
1	3138	127	50560	FRONT CABINET ASSY
2	3138	107	97180	BACK COVER ASSY
3	3138	107	98400	PEDESTAL ASSY
44	3138	104	48610	BASE
47	3138	104	53710	BUTTON-POWER
49	3138	104	54100	BUTTON-FUNCTION
53	3138	104	48600	SWIVEL
58	3138	104	50670	LENS-POWER
60	3138	104	49480	FOOT RUBBER
153	3138	106	58050	P.E. BAG-E-D.F.U.
450	3138	106	59150	CARTON
451	3138	106	56340	CUSHION - RIGHT
453	3138	106	56350	CUSHION - LEFT
454	3138	106	56580	PE BAG
601	3138	117	02630	E-D.F.U. ASSY-V/E
1053 ⚠	3138	118	75010	MAINS CORD (120V)
1054	3138	168	73390	I/F CABLE
1101 ⚠	2422	086	00208	FUSE T4AH 250V
1104	2422	132	07402	RELAY SDT -SS-112DM
1106 ⚠	2438	128	00183	SWITCH
1151 ⚠	9301	831	90323	CRT M41EJB523X130/P344BA
1156	3138	178	52120	107B2(92K)-P MAIN PCB ASSY
1157	3138	178	52130	107B2(92K)-VIDEO PCB ASSY
1158	3138	178	52140	107B2(92K)-KEY CNTR PCB ASSY
1258	3138	178	52060	EEPROM ASSY -107B2 (7804)
5101 ⚠	3138	168	75540	POWER TRANSFORMER
5102	3138	168	72810	LINE FILTER (143Y1R5)
5572 ⚠	3138	168	76190	L.O.T. CF1032K
7103	9322	140	14667	PHOTOCOUPLER TCET1103G 4P
7105	9322	054	09687	TRAN.MOS MTP6N60
7106	9352	645	03112	IC TEA1504AP/N2 14P
7113	9337	711	00686	IC TL431CLPRP 3P
7152	9339	208	10682	IC L7808CV 3P
7153	9334	536	00682	IC MC7805CT 3P
7154	9338	268	50126	TRANS BT169B T
7301	9352	613	72112	IC TDA4886/V1 24P
7302	9352	679	38112	V/E IC TDA4822PS/V1/M5
7303	9322	106	11676	IC LE33CZ-AP 3P
7304	8238	274	34420	OSD IC MTV018-27
7404	9322	144	36687	IC TDA8177F 7P
7433	9322	121	52682	IC L4990A 16P
7503	9352	637	56112	IC TDA4841PS-V2 32P
7573	9336	919	40687	IRF640 MOSFET
7605	9322	110	31687	FET POW MTP5P25 (MOTAO L)
7611	9333	935	10602	IC LM358N 8P (PHILIPS)
7701	9322	146	02667	IC LM2435T 9P
7801	8238	274	39590	IC, CPU 6148-K420PH-07A

Spare Parts list

Model : 107B20/74H

ITEM	CODE	NUM	BER	DESCRIPT
1	3138	127	56560	FRONT CABINET ASSY
2	3138	107	97180	BACK COVER ASSY
3	3138	107	98400	PEDESTAL ASSY
44	3138	104	48610	BASE
47	3138	104	53710	BUTTON-POWER
49	3138	104	54100	BUTTON-FUNCTION
53	3138	104	48600	SWIVEL
58	3138	104	50670	LENS-POWER
60	3138	104	49480	FOOT RUBBER
153	3138	106	58050	P.E. BAG-E-D.F.U.
450	3138	106	59150	CARTON
451	3138	106	56340	CUSHION - RIGHT
453	3138	106	56350	CUSHION - LEFT
454	3138	106	56580	PE BAG
601	3138	117	02630	E-D.F.U. ASSY-V/E
1053▲	3138	118	75010	MAINS CORD (120V)
1054	3138	168	73390	I/F CABLE
1101▲	2422	086	00208	FUSE T4AH 250V
1104▲	2422	132	07402	RELAY SDT -SS-112DM
1106	2438	128	00183	SWITCH
1111	3138	178	79150	AC INLET ASSY
1151▲	9301	831	90323	CRT M41EJB523X130/P344BA
1156	3138	178	52120	107B2(92K)-P MAIN PCB ASSY
1157	3138	178	52130	107B2(92K)-VIDEO PCB ASSY
1158	3138	178	52140	107B2(92K)-KEY CNTR PCB ASSY
1258	3138	178	52060	EEPROM ASSY -107B2 (7804)
1891	2438	128	00196	SWI TACT H EQU. TO 5 GY 160G SKHHAM B
2101	2020	307	90006	ACROSS LINE CAP 250V 1UF PM20
2102	2020	554	90138	CERSAF NSA 250V S 4N7 PM20 B
2103	2020	554	90138	CERSAF NSA 250V S 4N7 PM20 B
2105	2038	035	00315	ELCAP LZK 400V S 220U PM20 B
2109	2038	034	56478	ELCAP S 50V 4UF7 PM20 2E
2111	2038	302	00214	MEF CAP 15N 250V PM10 2E
2112	2038	034	53339	ELCAP S 16V 33UF PM20 2E T
2114	2020	554	90138	CERSAF NSA 250V S 4N7 PM20 B
2115	2038	031	35101	ELCAP VT 16V 100UF PM20 2E T
2120	2252	795	08453	CCAP DC Y5V 100N 50V S Z A
2122	2252	795	08453	CCAP DC Y5V 100N 50V S Z A
2128	2252	602	14416	CERC CAP DC 2KV 470P PM10 X7R
2152	2038	031	92479	ELCAP 160V 47UF PM20 105DEG C
2154	2038	035	00032	ELCAP 150UF 100V PM20 2E B
2156	2038	031	35102	ELCAP S 16V 1000UF PM20 2E T
2157	2038	031	35102	ELCAP S 16V 1000UF PM20 2E T
2160	2038	031	35102	ELCAP S 16V 1000UF PM20 2E T
2162	2038	031	35101	ELCAP VT 16V 100UF PM20 2E T
2164	2252	612	14016	DISC CAP Y5P 2KV 100PF 2E T
2165	2038	031	42102	ELCAP S 25V 1000UF PM20 2 B
2166	2038	034	53229	ELCAP S 16V 22UF PM20 2E
2167	2038	301	50401	PPN CAP 250V 2N2 PM10 2E T
2170	2020	552	90814	CERC DC 50V 3N3 PM10
2172	2038	035	50308	NP CAP 16V 33UF PM20 2E T
2301	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2302	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2304	2238	861	15221	MLCC 0850 NPO 220PF J 4B 9
2305	2238	861	15221	MLCC 0850 NPO 220PF J 4B 9
2307	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2308	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2309	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2310	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2311	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2312	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2316	2238	861	15478	SMD 0805 NPO 4P7 50V 0.25P
2317	2238	861	15478	SMD 0805 NPO 4P7 50V 0.25P
2318	2238	861	15478	SMD 0805 NPO 4P7 50V 0.25P
2319	2222	861	12479	MLCC 0805 NPO 50V 47P COL R
2322	2222	910	16647	CER2 0805 X7R 25V 68N PM10
2323	2238	580	16627	CER2 0805 X7R 50V 10N PM10 R
2324	2038	031	35221	CAP 16V 220U PM20 2E
2325	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2326	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2340	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2341	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2342	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2343	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2344	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2345	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2346	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2347	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2348	2038	034	56109	ELCAP S 50V 10UF PM20 2E
2349	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2401	2020	552	90607	CERC DC NPO 50V 220P PM5 2E T
2403	2038	031	35221	CAP 16V 220U PM20 2E
2404	2038	031	85229	ELCAP S 100V 22UF PM20 2E T
2405	2038	031	35221	CAP 16V 220U PM20 2E
2406	2038	302	50121	MEF CAP 100V 150N 2E PM10
2407	2038	302	50099	POLCAP 100V 470N PM10 2E
2408	2020	552	90807	CERC DC 50V 1N0 PM10
2409	2020	552	90807	CERC DC 50V 1N0 PM10
2431	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2432	2038	034	56108	ELCAP S 50V 1UF PM20 2E T
2433	2038	034	53229	ELCAP S 16V 22UF PM20 2E
2434	2038	301	50136	PPN CAP 100V 3N3 PM5
2435	2038	031	85109	ELCAP S 100V 10UF PM20 2E T
2436	2038	031	85109	ELCAP S 100V 10UF PM20 2E T
2437	2038	031	35221	CAP 16V 220U PM20 2E
2441	2038	301	50141	PPN CAP 1N5 100V PM5
2442	2020	552	90834	CCAP DC 50V 22N Z A
2443	2020	552	90814	CERC DC 50V 3N3 PM10
2444	2038	034	56108	ELCAP S 50V 1UF PM20 2E T
2445	2038	302	50218	MEF CAP 10N 100V PM2 2E
2446	2020	552	90835	CERC DC 50V 47N P80M20 2E0 2E
2501	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2502	2038	302	00155	MEF CAP 250V 100N PM10
2505	2038	031	35221	CAP 16V 220U PM20 2E
2506	2038	302	50095	MEF CAP 100V 100N PM10 2E
2507	2038	301	50186	PPN 100V 8N2 PM5 T
2508	2038	302	50218	MEF CAP 10N 100V PM2 2E
2509	2038	301	50157	CAP PP PPN 100V S 5N6 PM2 A
2510	2038	034	56108	ELCAP S 50V 1UF PM20 2E T
2511	2020	552	90597	CERC DC NPO 50V 39P PM5 2E T
2512	2038	034	53229	ELCAP S 16V 22UF PM20 2E
2513	2038	302	50095	MEF CAP 100V 100N PM10 2E
2514	2038	301	50135	PPN CAP 2N2 100V PM5
2515	2038	302	50306	CAP MPOL 100V S 180N PM10 A
2516	2038	302	50212	POLCAP 100V 100N PM5 2E T
2518	2020	552	90607	CERC DC NPO 50V 220P PM5 2E T
2521	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2522	2038	302	50218	MEF CAP 10N 100V PM2 2E
2523	2020	552	90807	CERC DC 50V 1N0 PM10
2526	2020	552	90807	CERC DC 50V 1N0 PM10
2571	2038	301	00174	CAP PP PPN 630V S 4N7 PM5 A
2572	2038	035	00026	ELCAP S 100V 220UF PM20 3
2575	2038	302	50099	POLCAP 100V 470N PM10 2E
2576	2038	301	00117	MPP CAP 100V 1UF 6E
2577	2038	031	92009	ELCAP 250V 10U PM20 2E VT
2578	2038	034	56478	ELCAP S 50V 4UF7 PM20 2E
2581	2038	301	00208	CAP PP PPN 250V S 47N PM5 B
2582	2038	034	56108	ELCAP S 50V 1UF PM20 2E T
2601	2020	552	90821	CERC DC 50V 10N PM10 T
2602	2038	031	85477	ELCAP VT 100V S 0U47 PM20 A
2603	2038	035	22801	ECAP NP 1U 160V 105C NK
2604	2038	031	92003	ELCAP S 250V 33UF PM20 2E
2605	2252	608	90004	CER2 DC X7R 500V S 10N PM10 B
2606	2038	301	00213	MPP CAP 100V 470N 6E
2607	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2608	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2610	2252	602	14216	CERCAP DC 2KV 220P K X7R T
2611	2252	602	14216	CERCAP DC 2KV 220P K X7R T
2612	2038	301	50189	CAP PP PPN 100V S 2N2 PM2
2613	2038	301	00335	PPN CAP 1600V 4N3 PM5
2614	2038	302	50121	MEF CAP 100V 150N 2E PM10
2616	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2618	2038	302	50095	MEF CAP 100V 100N PM10 2E
2619	2038	302	00214	MEF CAP 15N 250V PM10 2E
2620	2020	552	90834	CCAP DC 50V 22N Z A
2621	2020	552	90834	CCAP DC 50V 22N Z A

Spare Parts list

ITEM	CODE	NUM	BER	DESCRIPT
2623	2038	301	00224	MPS CAP 220N 250V PM5 7E
2624	2252	602	14166	CERC CAP DC 2KV 180P PM10 X7R
2626	2038	301	00229	MPS CAP 330N 250V PM5
2627	2252	561	08406	47P 1KV
2628	2020	552	90834	CCAP DC 50V 22N Z A
2629	2252	602	14416	CERC CAP DC 2KV 470P PM10 X7R
2631	2038	034	56478	ELCAP S 50V 4UF7 PM20 2E
2632	2038	302	00213	MEF CAP 100V 68N PM5 2E
2633	2252	641	33527	CERC Z5U 1KV 5N6 3E B
2634	2038	301	00305	MPS CAP 180N 250V PM5
2638	2038	301	00183	CAP PP PPN 250V S 47N PM5 B
2640	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2641	2038	031	65109	ELCAP VT 50V 10UF PM20 2E
2642	2038	301	00216	CAP MPP MPS 250V S 910N PM5
2644	2020	552	90821	CERC DC 50V 10N PM10 T
2645	2020	552	90834	CCAP DC 50V 22N Z A
2646	2252	795	08453	CCAP DC Y5V 100N 50V S Z A
2652	2020	552	90834	CCAP DC 50V 22N Z A
2702	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2721	2038	031	85109	ELCAP S 100V 10UF PM20 2E T
2722	2222	580	15649	CER2 0805 X7R 50V 100N PM10 R
2723	2038	035	22801	ECAP NP 1U 160V 105C NK
2724	2038	031	85108	ELCAP S 100V 1UF PM20 2E T
2725	2422	549	44346	SPARK GAP DSP-201m
2726	2222	580	15649	CER2 0805 X7R 50V 100N PM10 R
2727	2020	557	90151	CERC DC 500V 1N0 PM10
2731	2038	035	22801	ECAP NP 1U 160V 105C NK
2732	2038	031	85108	ELCAP S 100V 1UF PM20 2E T
2733	2422	549	44346	SPARK GAP DSP-201m
2751	2038	035	22801	ECAP NP 1U 160V 105C NK
2752	2038	031	85108	ELCAP S 100V 1UF PM20 2E T
2753	2422	549	44346	SPARK GAP DSP-201m
2760	2238	861	15471	CMC 0805 NPO 470P 50V J
2761	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2763	2238	580	16623	MLCC 0805 X7R 4N7F K 4B 9
2764	2252	602	14416	CERC CAP DC 2KV 470P PM10 X7R
2771	2222	580	15649	CER2 0805 X7R 50V 100N PM10 R
2772	2020	557	90149	CERC DC 500V 820P PM10
2774	2038	031	45101	ECAP S 25V 100UF M 2E T
2775	2038	031	85109	ELCAP S 100V 10UF PM20 2E T
2776	2038	031	85229	ELCAP S 100V 22UF PM20 2E T
2778	2038	031	45479	ELCAP VT 25V 47UF PM20 2E T
2779	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2780	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2781	2222	861	12479	MLCC 0805 NPO 50V 47P COL R
2782	2222	861	12479	MLCC 0805 NPO 50V 47P COL R
2783	2038	031	45479	ELCAP VT 25V 47UF PM20 2E T
2786	2252	602	14416	CERC CAP DC 2KV 470P PM10 X7R
2801	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2802	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2803	2038	034	54479	ELCAP S 25V 47UF PM20 2E T
2804	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T
2805	2020	552	90594	CERC DC NPO 50V 22P PM5 2E T
2806	2020	552	90594	CERC DC NPO 50V 22P PM5 2E T
2808	2038	302	50095	MEF CAP 100V 100N PM10 2E
2816	2020	552	90798	CERC DC 50V 220P PM10
2817	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2819	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2820	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2821	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2822	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2823	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2824	2020	552	90835	CERC DC 50V 47N P80M20 2E0 2E
2825	2020	552	90834	CCAP DC 50V 22N Z A
2826	2020	552	90598	CERC DC NPO 50V 47P PM5 2
3101	2322	242	13684	METGLAZ RST A VR37 680K PM5
3106	2138	660	00038	SCK -055 NTC
3107	2322	205	33221	RST FUSE NFR25 S 220R PM5
3108	2322	205	33221	RST FUSE NFR25 S 220R PM5
3111	2138	105	00085	RST MOX 3W RSS S 22K PM5 B
3112	2138	105	00111	PWR RES 820R 5W
3113	2322	205	33109	RST FUSE NFR25 10R PM5
3114	2138	101	13103	RST CRB CR12 A 10K PM5 A
3115	2138	112	73477	CARBRST R25 0.47R PM5
3116	2138	112	73477	CARBRST R25 0.47R PM5
3117	2138	112	73477	CARBRST R25 0.47R PM5
3118	2138	112	73477	CARBRST R25 0.47R PM5
3120	2138	112	73827	CARBRST FLM CR25 0.82R PM5
3121	2322	242	13475	METGLAZ RST A VR37 4M7 PM5 T
3122	2322	242	13475	METGLAZ RST A VR37 4M7 PM5 T
3123	2138	101	13104	RST CRB CR12 A 100K PM5 A
3124	2138	101	13334	RST CRB CR12 A 330K PM5 A
3125	2138	101	13102	RST CRB CR12 A 1K PM5 A
3126	2138	101	13102	RST CRB CR12 A 1K PM5 A
3127	2322	205	33101	MET FLM RST A NFR25 100R P
3128	2138	112	73229	CARBRST FLM CR25 22R PM5
3130	2138	101	13223	RST CRB CR12 A 22K PM5 A
3131	2138	116	12403	RST MFLM MF50S A 24K PM1 A
3133	2138	101	13331	RST CRB CR12 A 330R PM5 A
3135	2138	101	13122	RST CRB CR12 A 1K2 PM5 A
3138	2138	660	00036	PTC 9 OHM
3139	2138	101	13103	RST CRB CR12 A 10K PM5 A
3151	2138	116	14704	RST MFLM MF50S A 470K PM1 A
3153	2322	205	33102	RST FUSE NFR25 A 1K PM5
3154	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3156	2138	101	13223	RST CRB CR12 A 22K PM5 A
3159	2138	116	00158	MET FLM RST MF25 240K PM1
3160	2120	105	92372	RST MOX 1W RSS S 15K PM5 B
3161	2138	101	13102	RST CRB CR12 A 1K PM5 A
3162	2138	116	12204	RST MFLM MF50S A 220K PM1 A
3163	2138	116	15602	RST MFLM MF50S A 5K6 PM1 A
3165	2138	365	00081	RTRM CER LIN 1K H VG067TL1 B
3166	2138	101	13333	RST CRB CR12 A 33K PM5 A
3167	2138	101	13102	RST CRB CR12 A 1K PM5 A
3168	2138	101	13332	RST CRB CR12 A 3K3 PM5 A
3170	2138	101	13101	RST CRB CR12 A 100R PM5 A
3171	2138	101	13102	RST CRB CR12 A 1K PM5 A
3172	2138	101	13102	RST CRB CR12 A 1K PM5 A
3173	2138	101	13471	RST CRB CR12 A 470R PM5 A
3301	2322	730	61759	RST SM 0805 RC11 75R PM5 T
3302	2322	730	61759	RST SM 0805 RC11 75R PM5 T
3303	2322	730	61759	RST SM 0805 RC11 75R PM5 T
3305	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3306	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3307	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3309	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3310	2138	101	13102	RST CRB CR12 A 1K PM5 A
3311	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3312	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3313	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3314	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3315	2322	730	61222	RST SM 0805 RC11 2K2 PM5 R
3316	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3317	2322	730	61221	RES 220R 0805 SMD RC-11 T
3324	2322	730	61332	RES 3K3 0805 SMD
3325	2138	101	13103	RST CRB CR12 A 10K PM5 A
3326	2322	730	61103	RES 10K RC-11 SMD 0805 T
3327	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3328	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3329	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3330	2322	730	61394	SMD R0805 390K PM5
3332	2138	101	13101	RST CRB CR12 A 100R PM5 A
3333	2138	101	13101	RST CRB CR12 A 100R PM5 A
3334	2322	730	61151	RST SM 0805 RC11 150R PM5 R
3335	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3336	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3337	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3338	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3339	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3340	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3341	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3342	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3343	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3344	2138	101	13101	RST CRB CR12 A 100R PM5 A
3345	2138	101	13101	RST CRB CR12 A 100R PM5 A
3346	2138	101	13101	RST CRB CR12 A 100R PM5 A
3347	2322	730	61479	RES 47R 0805 SMD RC-11 T
3348	2322	730	61479	RES 47R 0805 SMD RC-11 T
3349	2138	101	13479	RST CRB CR12 A 47R PM5 A
3350	2322	730	61479	RES 47R 0805 SMD RC-11 T

Spare Parts list

ITEM	CODENUMBER			DESCRIPT
3352	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3353	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3354	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3359	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3361	2322	730	61478	RST SM 0805 RC11 4R7 PM5 R
3362	2322	730	61478	RST SM 0805 RC11 4R7 PM5 R
3372	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3376	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3378	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3379	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3401	2138	101	13471	RST CRB CR12 A 470R PM5 A
3402	2138	101	13471	RST CRB CR12 A 470R PM5 A
3403	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
3404	2138	116	12202	RST MFLM MF50S A 2K2 PM1 A
3405	2322	207	33109	RST MFLM NFR25H S 10R PM5
3406	2322	207	33109	RST MFLM NFR25H S 10R PM5
3407	2138	116	11009	RST MFLM MF50S A 10R PM1 A
3408	2138	116	04228	RST MFLM MF50S A 2R2 PM5 A
3409	2138	105	00414	METOX FLM RST 150R 1W PM5
3410	2138	116	04248	RST MFLM MF-50S A 2R4 PM5 A
3411	2322	205	33479	MET FLM RST NFR25 47R PM5PM5 T
3412	2138	116	04248	RST MFLM MF-50S A 2R4 PM5 A
3415	2138	660	00047	NTC 220R TTC-0522 PM5 T
3430	2138	101	13223	RST CRB CR12 A 22K PM5 A
3431	2138	101	13102	RST CRB CR12 A 1K PM5 A
3432	2138	101	13103	RST CRB CR12 A 10K PM5 A
3433	2138	101	13473	RST CRB CR12 A 47K PM5 A
3434	2138	101	13104	RST CRB CR12 A 100K PM5 A
3435	2138	101	00368	RST JUMP CR-25 A MAX R005 A
3436	2138	101	13103	RST CRB CR12 A 10K PM5 A
3437	2138	101	13479	RST CRB CR12 A 47R PM5 A
3438	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3441	2138	101	13102	RST CRB CR12 A 1K PM5 A
3442	2138	101	13105	RST CRB CR12 A 1M PM5 A
3443	2138	101	13684	RST CRB CR12 A 680K PM5 A
3444	2138	101	13332	RST CRB CR12 A 3K3 PM5 A
3445	2138	101	13103	RST CRB CR12 A 10K PM5 A
3446	2138	116	15102	RST MFLM MF50S A 5K1 PM1 A
3447	2138	101	13103	RST CRB CR12 A 10K PM5 A
3448	2138	101	13103	RST CRB CR12 A 10K PM5 A
3449	2138	101	13392	RST CRB CR12 A 3K9 PM5 A
3451	2138	101	13154	RST CRB CR12 A 150K PM5 A
3452	2138	101	13333	RST CRB CR12 A 33K PM5 A
3453	2138	101	13102	RST CRB CR12 A 1K PM5 A
3454	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3455	2138	101	13562	RST CRB CR12 A 5K6 PM5 A
3501	2138	112	73152	CARBRST FLM CR25 1K5 PM5
3502	2138	101	13103	RST CRB CR12 A 10K PM5 A
3503	2138	101	13473	RST CRB CR12 A 47K PM5 A
3504	2138	116	14703	RST MFLM MF50S A 47K PM1 A
3505	2138	112	73333	CARBRST FLM CR25 33K PM5
3506	2138	101	13103	RST CRB CR12 A 10K PM5 A
3507	2138	112	73101	CARBRST FLM CR25 100R PM5
3508	2138	116	12203	RST MFLM MF50S A 22K PM1 A
3509	2138	101	13102	RST CRB CR12 A 1K PM5 A
3510	2138	116	00158	MET FLM RST MF25 240K PM1
3511	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3512	2138	101	13103	RST CRB CR12 A 10K PM5 A
3513	2138	101	13683	RST CRB CR12 A 68K PM5 A
3514	2138	116	16803	RST MFLM MF50S A 68K PM1 A
3515	2138	116	15601	RST MFLM MF50S A 560R PM1 A
3516	2138	112	73472	CARBRST FLM CR25 4K7 PM5
3517	2138	101	13333	RST CRB CR12 A 33K PM5 A
3518	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
3519	2138	101	13822	RST CRB CR12 A 8K2 PM5 A
3520	2138	101	13123	RST CRB CR12 A 12K PM5 A
3521	2138	116	11204	RST MFLM MF50S A 120K PM1 A
3522	2138	101	13102	RST CRB CR12 A 1K PM5 A
3523	2138	116	12702	RST MFLM MF50S A 2K7 PM1 A
3524	2138	116	18201	RST MFLM MF50S A 820R PM1 A
3525	2138	101	13332	RST CRB CR12 A 3K3 PM5 A
3527	2138	112	73221	CARBRST FLM CR25 220R PM5
3530	2138	101	13102	RST CRB CR12 A 1K PM5 A
3531	2138	101	13102	RST CRB CR12 A 1K PM5 A
3533	2138	116	12704	RST MFLM MF50S A 270K PM1 A
3534	2138	101	13104	RST CRB CR12 A 100K PM5 A
3536	2138	101	13154	RST CRB CR12 A 150K PM5 A
3537	2138	101	13224	RST CRB CR12 A 220K PM5 A
3538	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3571	2138	112	73331	CARBRST FLM CR25 330R PM5 T
3572	2322	205	33109	RST FUSE NFR25 10R PM5
3573	2138	101	13122	RST CRB CR12 A 1K2 PM5 A
3574	2138	101	13821	RST CRB CR12 A 820R PM5 A
3575	2322	205	33109	RST FUSE NFR25 10R PM5
3576	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3577	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3578	2322	205	33108	MST FUSE NFR25 S 1R PM5 5 T
3581	2322	207	33108	MET FLM RST NFR25H 1R0 PM5 T
3582	2322	205	33108	MST FUSE NFR25 S 1R PM5 5 T
3583	2322	242	13105	METGLAZ RST A VR37 1M PM5 T
3585	2322	242	13155	METGLAZ RST A VR37 1M5 PM5 6E
3586	2138	116	16803	RST MFLM MF50S A 68K PM1 A
3587	2138	365	00084	RTRM CER LIN 20K V VG067TH1 B
3590	2138	112	73183	CARBRST FLM CR25 18K PM5 T
3591	2138	116	18204	RST MFLM MF50S A 820K PM1 A
3592	2138	112	73273	CARBRST FLM CR25 27K PM5
3593	2138	101	13223	RST CRB CR12 A 22K PM5 A
3594	2138	101	13392	RST CRB CR12 A 3K9 PM5 A
3595	2138	101	13224	RST CRB CR12 A 220K PM5 A
3596	2138	101	13473	RST CRB CR12 A 47K PM5 A
3597	2138	101	13562	RST CRB CR12 A 5K6 PM5 A
3598	2138	101	13334	RST CRB CR12 A 330K PM5 A
3601	2138	101	13102	RST CRB CR12 A 1K PM5 A
3602	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3603	2322	207	33339	RST FUSE NFR25H S 33R PM5 A
3604	2120	105	92191	METOX FLM RST 5K6 3W PM5 T
3605	2138	105	00415	RST MOX 5W RSS S 1R8 PM5
3606	2138	116	11009	RST MFLM MF50S A 10R PM1 A
3607	2138	116	18201	RST MFLM MF50S A 820R PM1 A
3608	2138	101	13223	RST CRB CR12 A 22K PM5 A
3609	2322	207	33101	RST MFLM NFR25H 100R PM5
3610	2138	105	00095	RST MOX 7W RSH S 33R PM5
3611	2322	205	33108	MST FUSE NFR25 S 1R PM5 5 T
3612	2138	101	13223	RST CRB CR12 A 22K PM5 A
3613	2322	207	33108	MET FLM RST NFR25H 1R0 PM5 T
3614	2120	105	90722	MET FLM RNS(OXIDE)1R0 1W PM5
3615	2322	205	33221	RST FUSE NFR25 S 220R PM5
3616	2138	101	13103	RST CRB CR12 A 10K PM5 A
3617	2138	101	13123	RST CRB CR12 A 12K PM5 A
3618	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3619	2138	101	13102	RST CRB CR12 A 1K PM5 A
3620	2138	116	16803	RST MFLM MF50S A 68K PM1 A
3621	2138	101	13229	RST CRB CR12 A 22R PM5 A
3622	2138	101	13104	RST CRB CR12 A 100K PM5 A
3624	2138	101	13103	RST CRB CR12 A 10K PM5 A
3626	2138	101	13229	RST CRB CR12 A 22R PM5 A
3627	2138	116	11509	RST MFLM MF50S A 15R PM1 A
3628	2138	116	04228	RST MFLM MF50S A 2R2 PM5 A
3629	2138	101	13333	RST CRB CR12 A 33K PM5 A
3630	2138	116	11001	RST MFLM MF50S A 100R PM1 A
3631	2138	105	00074	TST MOX5W RSM5WL S 150R PM5 B
3632	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
3633	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
3634	2138	101	13103	RST CRB CR12 A 10K PM5 A
3635	2138	101	13103	RST CRB CR12 A 10K PM5 A
3636	2138	101	13393	RST CRB CR12 A 39K PM5 A
3637	2138	101	13393	RST CRB CR12 A 39K PM5 A
3638	2138	112	73154	CARBRST FLM CR25 150K PM5
3639	2138	112	73154	CARBRST FLM CR25 150K PM5
3640	2138	112	73154	CARBRST FLM CR25 150K PM5
3641	2138	112	73154	CARBRST FLM CR25 150K PM5
3642	2138	101	13393	RST CRB CR12 A 39K PM5 A
3643	2138	101	13393	RST CRB CR12 A 39K PM5 A
3644	2138	101	13473	RST CRB CR12 A 47K PM5 A
3645	2138	101	13104	RST CRB CR12 A 100K PM5 A
3646	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
3647	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
3648	2138	116	11009	RST MFLM MF50S A 10R PM1 A
3653	2322	242	13224	METGLAZ RST A VR37 220K PM5 T
3654	2120	101	28222	RST CMP ERC12 A 2K2 PM10 A
3655	2322	242	13104	METGLAZ RST A VR37 100K

Spare Parts list

ITEM	CODE	NUM BER	DESCRIPT
3657	2322	242 13224	METGLAZ RST A VR37 220K PM5 T
3658	2138	101 13229	RST CRB CR12 A 22R PM5 A
3659	2322	242 13224	METGLAZ RST A VR37 220K PM5 T
3660	2138	101 13473	RST CRB CR12 A 47K PM5 A
3661	2138	101 13475	RST CRB CR12 A 4M7 PM5 A
3662	2138	101 13182	RST CRB CR12 A 1K8 PM5 A
3669	2138	101 13102	RST CRB CR12 A 1K PM5 A
3672	2138	101 13101	RST CRB CR12 A 100R PM5 A
3673	2138	116 04478	RST MFLM MF50S A 4R7 PM5 A
3675	2138	101 13103	RST CRB CR12 A 10K PM5 A
3676	2138	101 13223	RST CRB CR12 A 22K PM5 A
3677	2138	101 13229	RST CRB CR12 A 22R PM5 A
3681	2120	105 92392	MET FLM RST 1W 47R PM5 RSS B
3682	2138	116 11002	RST MFLM MF50S A 1K PM1 A
3684	2138	101 13223	RST CRB CR12 A 22K PM5 A
3685	2138	101 13473	RST CRB CR12 A 47K PM5 A
3686	2138	112 73273	CARBRST FLM CR25 27K PM5
3687	2138	105 00076	RST MOX 5W 330R RSS PM5
3691	2138	101 13393	RST CRB CR12 A 39K PM5 A
3692	2138	101 13103	RST CRB CR12 A 10K PM5 A
3693	2138	112 73154	CARBRST FLM CR25 150K PM5
3694	2138	101 13229	RST CRB CR12 A 22R PM5 A
3699	2138	101 13682	RST CRB CR12 A 6K8 PM5 A
3703	2138	101 13109	RST CRB CR12 A 10R PM5 A
3704	2138	101 13471	RST CRB CR12 A 470R PM5 A
3705	2138	101 13471	RST CRB CR12 A 470R PM5 A
3706	2138	101 13471	RST CRB CR12 A 470R PM5 A
3707	2322	730 61101	RST SM 0805 RC11 100R PM5 R
3708	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3709	2138	101 13221	RST CRB CR12 A 220R PM5 A
3713	2138	101 13109	RST CRB CR12 A 10R PM5 A
3716	2138	101 13109	RST CRB CR12 A 10R PM5 A
3718	2138	101 13479	RST CRB CR12 A 47R PM5 A
3719	2138	101 13479	RST CRB CR12 A 47R PM5 A
3720	2138	101 13479	RST CRB CR12 A 47R PM5 A
3721	2120	101 28479	CARBRST COMP 1/2W 47R PM10
3722	2138	112 73274	CARBRST FLM CR25 270K PM5
3723	2138	101 13821	RST CRB CR12 A 820R PM5 A
3724	2138	116 12403	RST MFLM MF50S A 24K PM1 A
3725	2322	730 61334	RST SM 0805 RC11 330K PM5 R
3726	2138	112 73473	CARBRST FLM CR25 47K PM5
3727	2138	101 13433	RES CR12 1/6W 43K PM5
3728	2138	112 73109	CARBRST FLM CR25 10R PM5
3729	2138	101 13479	RST CRB CR12 A 47R PM5 A
3730	2322	730 61105	RES 1M RC-11 SMD 0805 T
3731	2120	101 28479	CARBRST COMP 1/2W 47R PM10
3732	2138	112 73274	CARBRST FLM CR25 270K PM5
3733	2138	101 13821	RST CRB CR12 A 820R PM5 A
3734	2138	116 12403	RST MFLM MF50S A 24K PM1 A
3735	2322	730 61334	RST SM 0805 RC11 330K PM5 R
3736	2138	112 73473	CARBRST FLM CR25 47K PM5
3737	2138	112 73433	CARBRST FLM CR25 43K PM5
3738	2138	112 73109	CARBRST FLM CR25 10R PM5
3740	2322	730 91002	RST SM 0805 JUMP. MAX 0R05 T
3741	2322	730 61105	RES 1M RC-11 SMD 0805 T
3742	2322	730 61105	RES 1M RC-11 SMD 0805 T
3743	2322	730 61121	RES 120R 0805 SMD RC-11 T
3744	2322	730 61101	RST SM 0805 RC11 100R PM5 R
3745	2322	730 61101	RST SM 0805 RC11 100R PM5 R
3751	2120	101 28479	CARBRST COMP 1/2W 47R PM10
3752	2138	112 73274	CARBRST FLM CR25 270K PM5
3753	2138	101 13821	RST CRB CR12 A 820R PM5 A
3754	2138	116 12403	RST MFLM MF50S A 24K PM1 A
3755	2322	730 61334	RST SM 0805 RC11 330K PM5 R
3756	2138	112 73473	CARBRST FLM CR25 47K PM5
3757	2138	112 73433	CARBRST FLM CR25 43K PM5
3758	2138	112 73109	CARBRST FLM CR25 10R PM5
3759	2322	205 33228	MET FLM RST A NFR25 2R2 P5 T
3761	2322	730 61102	RST SMC 0805 RC11 1K PM5 T
3762	2322	730 61103	RES 10K RC-11 SMD 0805 T
3763	2322	730 61332	RES 3K3 0805 SMD
3764	2322	730 61472	RST SM 0805 RC11 4K7 PM5 R
3765	2322	730 61682	RES 6K8 0805 SMD
3767	2322	730 61472	RST SM 0805 RC11 4K7 PM5 R
3771	2120	101 28152	CARBRST COMP 1/2W 1K5 PM10
3772	2120	101 28153	CARBRST COMP 1/2W 15K PM10
3773	2322	730 61478	RST SM 0805 RC11 4R7 PM5 R
3776	2138	101 13101	RST CRB CR12 A 100R PM5 A
3777	2322	730 61101	RST SM 0805 RC11 100R PM5 R
3778	2138	101 13102	RST CRB CR12 A 1K PM5 A
3801	2138	112 03006	RES ARRAY 4K7 6A
3802	2138	101 13223	RST CRB CR12 A 22K PM5 A
3803	2138	101 13223	RST CRB CR12 A 22K PM5 A
3804	2138	101 13102	RST CRB CR12 A 1K PM5 A
3805	2138	101 13223	RST CRB CR12 A 22K PM5 A
3806	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3807	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3808	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3809	2138	101 13102	RST CRB CR12 A 1K PM5 A
3810	2138	101 13102	RST CRB CR12 A 1K PM5 A
3811	2138	101 13102	RST CRB CR12 A 1K PM5 A
3812	2138	101 13102	RST CRB CR12 A 1K PM5 A
3813	2138	101 13102	RST CRB CR12 A 1K PM5 A
3818	2138	101 13332	RST CRB CR12 A 3K3 PM5 A
3819	2138	101 13103	RST CRB CR12 A 10K PM5 A
3821	2138	101 13101	RST CRB CR12 A 100R PM5 A
3822	2138	101 13101	RST CRB CR12 A 100R PM5 A
3824	2138	101 13221	RST CRB CR12 A 220R PM5 A
3825	2138	101 13101	RST CRB CR12 A 100R PM5 A
3826	2138	101 13101	RST CRB CR12 A 100R PM5 A
3833	2138	101 13222	RST CRB CR12 A 2K2 PM5 A
3834	2138	101 13223	RST CRB CR12 A 22K PM5 A
3835	2138	101 13223	RST CRB CR12 A 22K PM5 A
3836	2138	101 13103	RST CRB CR12 A 10K PM5 A
3838	2138	101 13102	RST CRB CR12 A 1K PM5 A
3840	2138	101 13221	RST CRB CR12 A 220R PM5 A
3841	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3842	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3844	2138	101 13123	RST CRB CR12 A 12K PM5 A
3845	2138	101 13392	RST CRB CR12 A 3K9 PM5 A
3846	2138	101 13121	RST CRB CR12 A 120R PM5 A
3847	2138	101 13121	RST CRB CR12 A 120R PM5 A
3848	2138	101 13101	RST CRB CR12 A 100R PM5 A
3849	2138	101 13101	RST CRB CR12 A 100R PM5 A
3850	2138	101 13101	RST CRB CR12 A 100R PM5 A
3851	2138	101 13333	RST CRB CR12 A 33K PM5 A
3852	2138	101 13123	RST CRB CR12 A 12K PM5 A
3891	2138	116 11004	RST MFLM MF50S A 100K PM1 A
3892	2138	116 15603	RST MFLM MF50S A 56K PM1 A
3893	2138	116 14702	RST MFLM MF50S A 4K7 PM1 A
3894	2138	116 11503	RST MFLM MF50S A 15K PM1 A
3895	2138	116 12403	RST MFLM MF50S A 24K PM1 A
5007	3138	168 73370	DEGAUSSING COIL
5101⚠	3138	168 75540	POWER TRANSFORMER
5102	3138	168 72810	LINE FILTER (143Y1R5)
5106	3138	178 79160	BAR COIL 7U5H PM10
5107	3138	178 79160	BAR COIL 7U5H PM10
5112	2438	535 98058	IND FXD BEAD EMI 100 MHZ 80R R
5151	2422	535 94971	DRUM CHOKE COIL 100UH T
5152	2422	535 94971	DRUM CHOKE COIL 100UH T
5153	2422	535 94971	DRUM CHOKE COIL 100UH T
5154	3138	168 72630	BEAD COIL
5155	2422	535 94971	DRUM CHOKE COIL 100UH T
5156	2422	535 94971	DRUM CHOKE COIL 100UH T
5301	2422	535 97608	COIL 1MUH8 PM10
5303	3138	168 72620	BEAD COIL (BF30TA-2.5X3X1B)
5571	2422	535 94972	DRUM COIL 180UH PM10 T
5572⚠	3138	168 76190	L.O.T. CF1032K
5601	3138	178 71330	DRIVER TRANSF.
5602	3138	178 71730	DRUM COIL 20MH
5603	3138	168 73460	CENTERING X'FMR
5604	3138	178 75990	DRUM CHOKE COIL 6MH
5606	3138	178 74800	LINEARITY COIL (2U)
5608	3138	168 72620	BEAD COIL (BF30TA-2.5X3X1B)
5609	3138	128 74410	DAF TRANSFORMER
5610	3138	168 72620	BEAD COIL (BF30TA-2.5X3X1B)
5701	2422	535 97608	COIL 1MUH8 PM10
5702	2422	535 97608	COIL 1MUH8 PM10
5721	2422	535 97725	HIGH FREQ.CHOKE 0.22UH PM10
5723	2422	535 97608	COIL 1MUH8 PM10

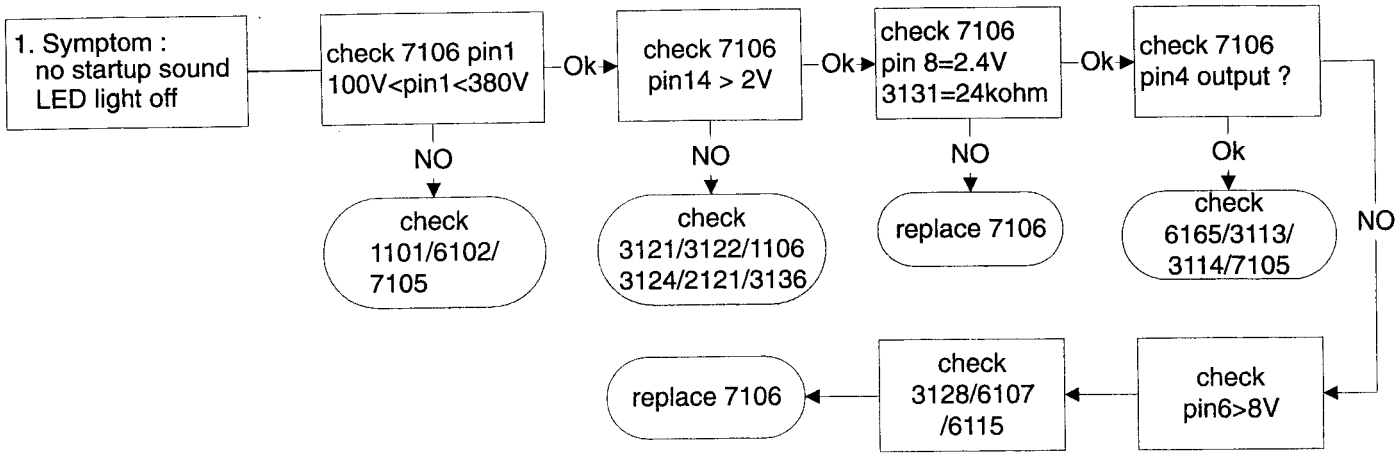
Spare Parts list

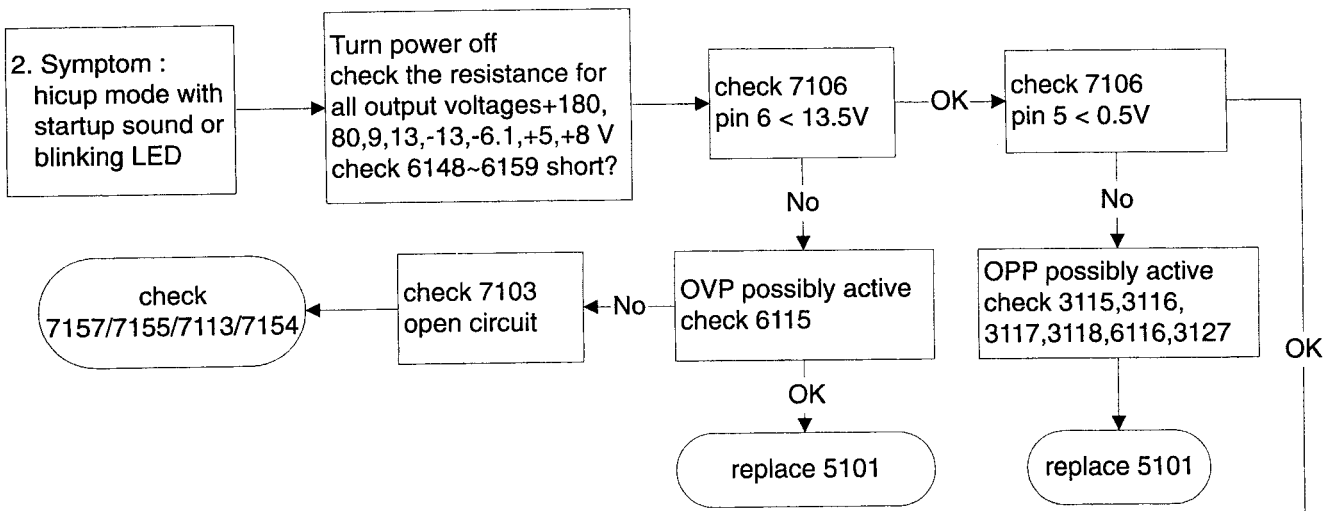
ITEM	CODE	NUM	BER	DESCRIPT
5732	2422	535	97725	HIGH FREQ.CHOKE 0.22UH PM10
5733	2422	535	97608	COIL 1MUH8 PM10
5752	2422	535	97725	HIGH FREQ.CHOKE 0.22UH PM10
5753	2422	535	97608	COIL 1MUH8 PM10
5772	3138	168	72620	BEAD COIL (BF30TA-2.5X3X1B)
5773	3138	168	72620	BEAD COIL (BF30TA-2.5X3X1B)
5774	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5775	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5779	2422	535	97608	COIL 1MUH8 PM10
5781	2422	535	94971	DRUM CHOKE COIL 100UH T
5801	2422	535	97416	COIL 33MUH PM10
6102	9322	058	14682	BRIDGE GBU4K
6103	9334	979	50683	DIODE RGP10J (GI)
6107	3198	010	10071	DIODE BAV21 (UAW)
6108	9334	979	50683	DIODE RGP10J (GI)
6109	9337	516	60683	DIODE RGP10D (GI)
6113	3198	010	10011	DIODE 1N4148 (UAW)
6115	3198	010	10011	DIODE 1N4148 (UAW)
6117	3198	010	10011	DIODE 1N4148 (UAW)
6118	3198	010	10011	DIODE 1N4148 (UAW)
6121	3198	010	10011	DIODE 1N4148 (UAW)
6123	3198	010	10011	DIODE 1N4148 (UAW)
6124	3198	010	10011	DIODE 1N4148 (UAW)
6125	3198	010	10011	DIODE 1N4148 (UAW)
6148	9335	435	00133	DIO REC BYV27-100
6151	9338	185	20133	DIO REC BYM26E A(PHSE) A
6152	9322	126	36682	DIODE 31DF6 6E
6153	9335	435	00133	DIO REC BYV27-100
6155	9335	435	00133	DIO REC BYV27-100
6157	9334	979	50683	DIODE RGP10J (GI)
6158	3198	010	10071	DIODE BAV21 (UAW)
6159	3198	010	10011	DIODE 1N4148 (UAW)
6161	3198	010	10011	DIODE 1N4148 (UAW)
6162	3198	010	21591	DIODE BZX79-C15 (UAW)
6163	3198	010	10011	DIODE 1N4148 (UAW)
6165	3198	010	21591	DIODE BZX79-C15 (UAW)
6301	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6302	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6303	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6304	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6401	9335	526	80133	DIODE BYV27-200
6402	9335	007	10133	DIODE BZV85-C18
6403	9335	007	10133	DIODE BZV85-C18
6431	3198	010	10011	DIODE 1N4148 (UAW)
6433	3198	010	10011	DIODE 1N4148 (UAW)
6434	9331	669	70133	DIODE BZX79B27V
6435	9331	669	50133	DIODE BZX79-B22
6436	9337	516	60683	DIODE RGP10D (GI)
6437	3198	010	25181	DIODE BZX79-C5V1 (UAW)
6438	3198	010	10011	DIODE 1N4148 (UAW)
6439	3198	010	10011	DIODE 1N4148 (UAW)
6501	3198	010	10011	DIODE 1N4148 (UAW)
6502	3198	010	10011	DIODE 1N4148 (UAW)
6503	3198	010	10011	DIODE 1N4148 (UAW)
6504	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6505	3198	010	10071	DIODE BAV21 (UAW)
6507	3198	010	10071	DIODE BAV21 (UAW)
6508	9336	247	40113	DIODE BAT82
6509	3198	010	10011	DIODE 1N4148 (UAW)
6511	3198	010	10011	DIODE 1N4148 (UAW)
6571	3198	010	10071	DIODE BAV21 (UAW)
6572	3198	010	10011	DIODE 1N4148 (UAW)
6573	9322	126	36682	DIODE 31DF6 6E
6574	9337	516	50683	DIODE RGP15K (GI)
6575	9334	939	60683	DIODE RGP10G (GI)
6581	3198	010	10011	DIODE 1N4148 (UAW)
6582	3198	010	10011	DIODE 1N4148 (UAW)
6583	3198	010	21291	DIODE BZX79-C12 (UAW)
6584	3198	010	10011	DIODE 1N4148 (UAW)
6585	3198	010	28281	DIODE BZX79-C8V2 (UAW)
6601	9335	435	00133	DIO REC BYV27-100
6602	9340	312	20127	DIO REC BY459-1500 S (ELCO) L
6603	3198	010	21591	DIODE BZX79-C15 (UAW)
6604	9322	115	74682	DIODE 31DF4
6605	9339	577	60683	DIODE SB140 (GI)
6606	9339	577	60683	DIODE SB140 (GI)
6609	3198	010	24781	DIODE BZX79-C4V7 (UAW)
6610	9337	516	60683	DIODE RGP10D (GI)
6611	9334	979	50683	DIODE RGP10J (GI)
6623	9337	773	20683	DIO REG P6KE39A A(MOTA) R
6624	3198	010	21291	DIODE BZX79-C12 (UAW)
6711	3198	010	25181	DIODE BZX79-C5V1 (UAW)
6721	3198	010	10531	SMD DIODE BAV103
6722	3198	010	10071	DIODE BAV21 (UAW)
6724	3198	010	10531	SMD DIODE BAV103
6731	3198	010	10531	SMD DIODE BAV103
6732	3198	010	10071	DIODE BAV21 (UAW)
6734	3198	010	10531	SMD DIODE BAV103
6751	3198	010	10071	DIODE BAV21 (UAW)
6752	3198	010	10071	DIODE BAV21 (UAW)
6754	3198	010	10531	SMD DIODE BAV103
6771	9334	939	60683	DIODE RGP10G (GI)
6801	3198	010	10011	DIODE 1N4148 (UAW)
6891	9322	146	03682	LED L-3WYGW
7102	3198	020	43591	TRANS. BC338-40
7103	9322	140	14667	PHOTOCOUPLER TCET1103G 4P
7105	9322	054	09687	TRAN.MOS MTP6N60
7106	9352	645	03112	IC TEA1504AP/N2 14P
7113	9337	711	00686	IC TL431CLPRP 3P
7152	9339	208	10682	IC L7808CV 3P
7153	9334	536	00682	IC MC7805CT 3P
7154	9338	268	50126	TRANS BT169B T
7155	3198	020	43011	TRANS BF422 (UAW)
7156	3198	020	40041	TRANS BC547C (UAW)
7157	3198	020	40081	TRANS BC548C (UAW)
7301	9352	613	72112	IC TDA4886/V1 24P
7302	9352	679	38112	V/E IC TDA4822PS/V1/M5
7303	9322	106	11676	IC LE33CZ-AP 3P
7304	8238	274	34420	OSD IC MTV018-27
7322	3198	020	40081	TRANS BC548C (UAW)
7404	9322	144	36687	IC TDA8177F 7P
7431	3198	020	40081	TRANS BC548C (UAW)
7432	3198	020	40081	TRANS BC548C (UAW)
7433	9322	121	52682	IC L4990A 16P
7434	3198	020	43311	TRANS PH2369 (UAW)
7435	3198	020	40161	TRANS BC558C (UAW)
7501	3198	020	40081	TRANS BC548C (UAW)
7502	3198	020	43021	TRANS BF423 (UAW)
7503	9352	637	56112	IC TDA4841PS-V2 32P
7504	9332	377	80126	TRANS BC546B (UAW)
7505	3198	020	40161	TRANS BC558C (UAW)
7506	3198	020	40161	TRANS BC558C (UAW)
7507	3198	020	40081	TRANS BC548C (UAW)
7571	9322	054	09687	TRAN.MOS MTP6N60
7572	3198	020	43311	TRANS PH2369 (UAW)
7573	9336	919	40687	IRF640 MOSFET
7575	3198	020	40161	TRANS BC558C (UAW)
7601	9340	039	60126	TRANS BSN254A
7602	9340	263	00127	TRANS POW BU2527AF
7603	3198	020	43591	TRANS. BC338-40
7604	3198	020	43491	TRANS BC328-40
7605	9322	110	31687	FET POW MTP5P25 (MOTAO L)
7606	9335	671	30126	TRANS BC517
7607	9335	671	20126	TRANS BC516
7608	3198	020	43011	TRANS BF422 (UAW)
7609	3198	020	43591	TRANS. BC338-40
7610	3198	020	40161	TRANS BC558C (UAW)
7611	9333	935	10602	IC LM358N 8P (PHILIPS)
7612	3198	020	40041	TRANS BC547C (UAW)
7613	3198	020	40041	TRANS BC547C (UAW)
7615	9322	031	68687	TRANS. IRF640
7618	3198	020	40041	TRANS BC547C (UAW)
7619	3198	020	40041	TRANS BC547C (UAW)
7620	9322	031	68687	TRANS. IRF640
7621	9322	031	68687	TRANS. IRF640
7622	9322	031	68687	TRANS. IRF640
7623	9322	031	68687	TRANS. IRF640
7624	9340	258	70126	TRA SIG MPSA44
7626	3198	020	43541	TRANS BC337-40 (UAW) R
7627	3198	020	43411	TRANS BC327 (UAW)

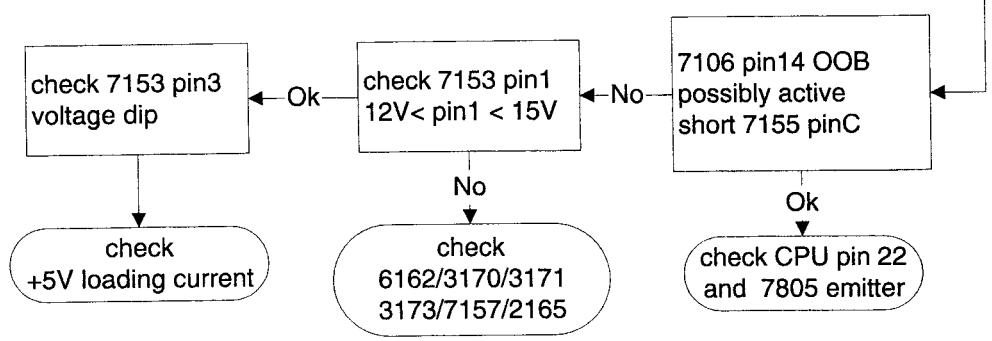
ITEM	CODE	NUM	BER	DESCRIPT
7629	3198	020	40081	TRANS BC548C (UAW)
7630	3198	020	40081	TRANS BC548C (UAW)
7631	3198	020	43021	TRANS BF423 (UAW)
7636	3198	020	40041	TRANS BC547C (UAW)
7701	9322	146	02667	IC LM2435T 9P
7721	3198	020	43011	TRANS BF422 (UAW)
7722	3198	020	43011	TRANS BF422 (UAW)
7731	3198	020	43011	TRANS BF422 (UAW)
7732	3198	020	43011	TRANS BF422 (UAW)
7751	3198	020	43011	TRANS BF422 (UAW)
7752	3198	020	43011	TRANS BF422 (UAW)
7761	3198	020	40081	TRANS BC548C (UAW)
7801	8238	274	39590	IC, CPU 6148-K420PH-07A
7805	3198	020	40081	TRANS BC548C (UAW)
7808	3198	020	40161	TRANS BC558C (UAW)

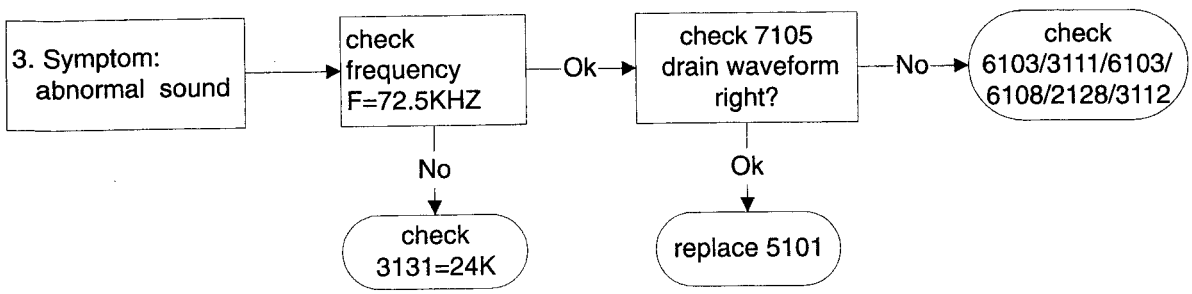
Repair Flow Chart

A. Power Supply Failure

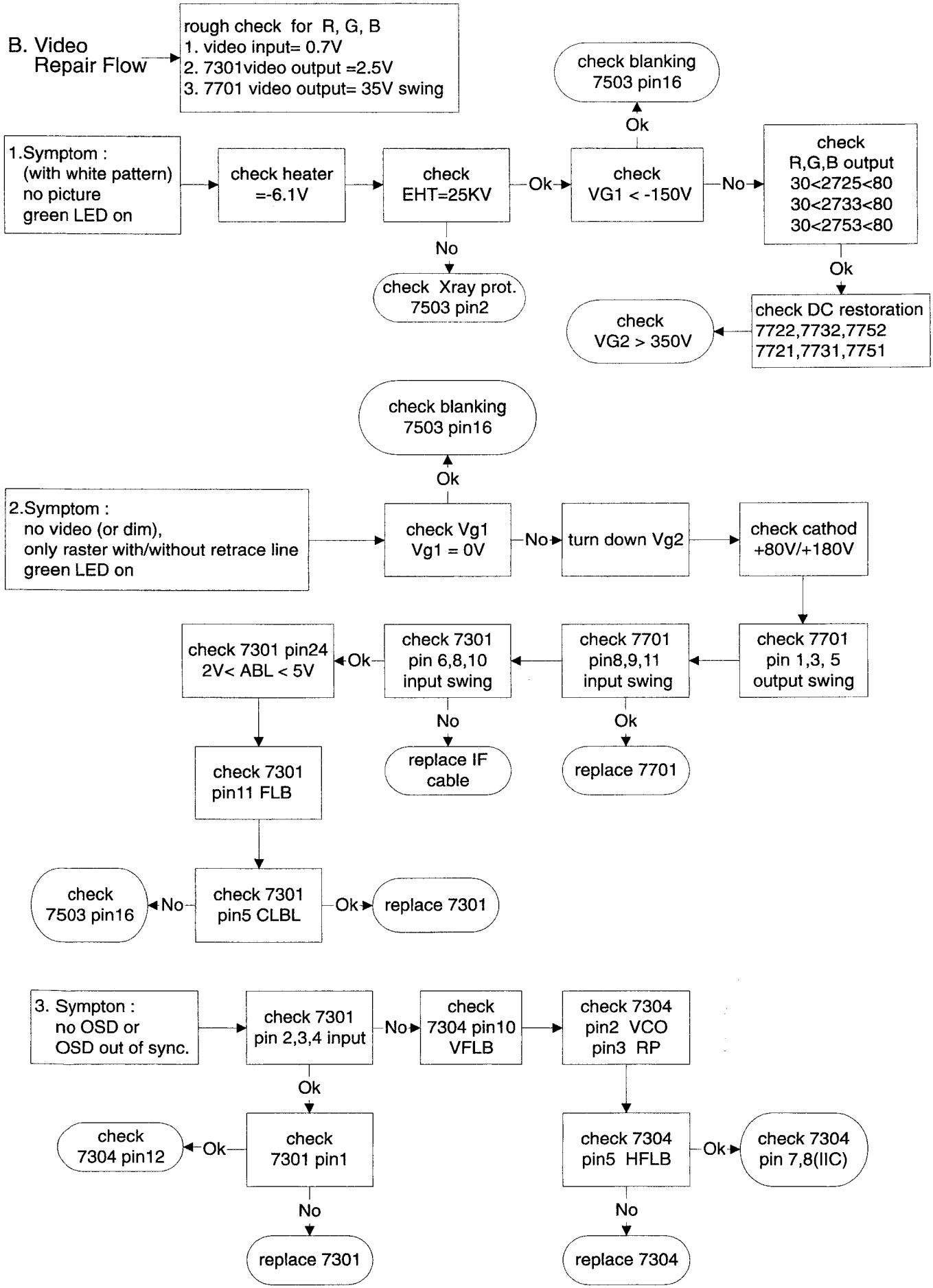






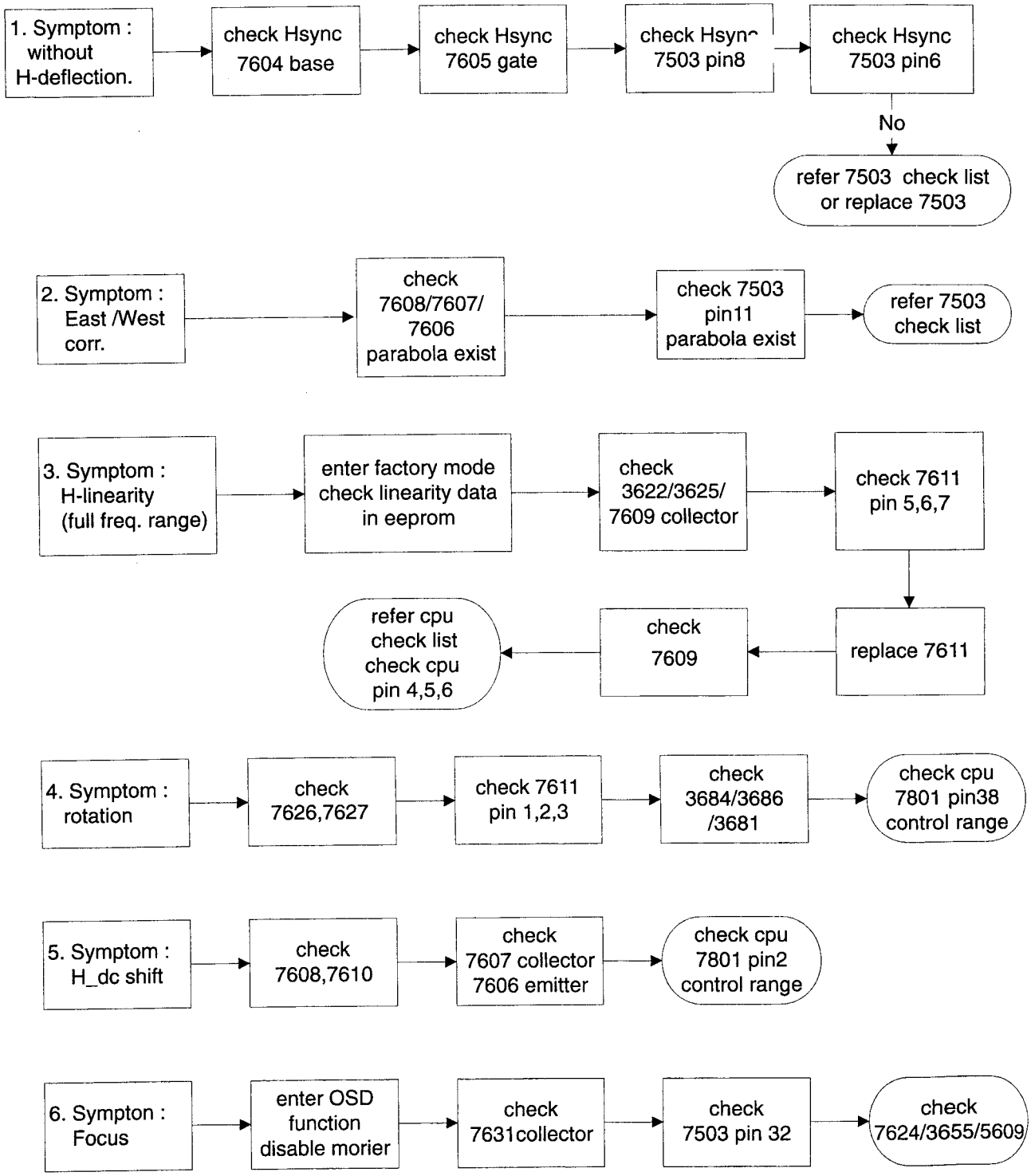


Repair Flow Chart (Continued)

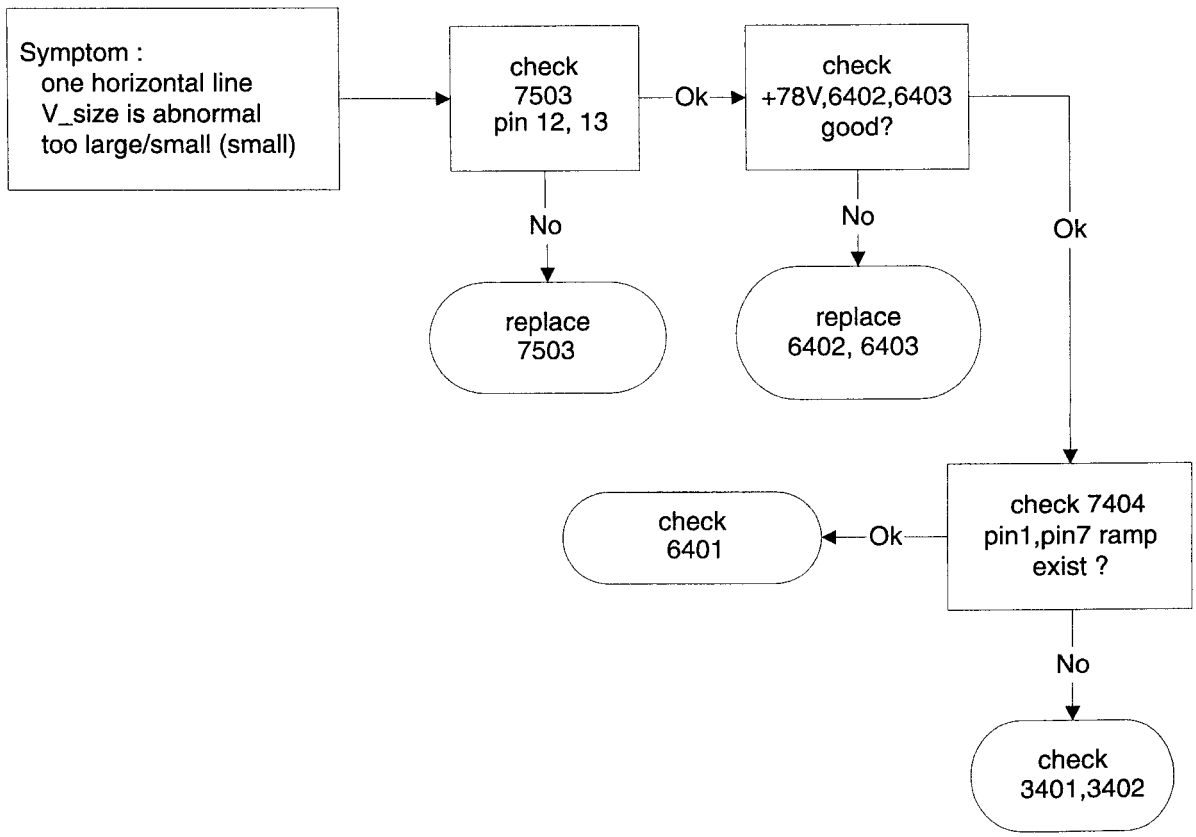


Repair Flow Chart (Continued)

C. Horizontal deflection
output repair flow :


1. Symptom : without H-deflection.
check Hsync 7604 base
check Hsync 7605 gate
check Hsync 7503 pin8
check Hsync 7503 pin6
No
refer 7503 check list or replace 7503
2. Symptom : East /West corr.
check 7608/7607/ 7606 parabola exist
check 7503 pin11 parabola exist
refer 7503 check list
3. Symptom : H-linearity (full freq. range)
enter factory mode check linearity data in eeprom
check 3622/3625/ 7609 collector
check 7611 pin 5,6,7
replace 7611
check 7609
refer cpu check list check cpu pin 4,5,6
4. Symptom : rotation
check 7626,7627
check 7611 pin 1,2,3
check 3684/3686 /3681
check cpu 7801 pin38 control range
5. Symptom : H_dc shift
check 7608,7610
check 7607 collector 7606 emitter
check cpu 7801 pin2 control range
6. Sympton : Focus
enter OSD function disable morier
check 7631collector
check 7503 pin 32
check 7624/3655/5609

D. Vertical Deflection Failure → basic check +13/-13V/+78V



Repair Flow Chart (Continued)

E. CPU check list → Basic Check → check cpu pin 6/pin 5=5V pin 8/pin 9=12MhZ

4. H-linearity → check pin 4 pwm from 0V to 5V

2. H-Centering → check pin2 pwm from 0V to 5V

19. Blank → check pin19 normal : low change timing : Hi

14, 13, 12, 11 (Q5,Q4, Q3, Q2,Q1) S-cap switch → check Q1-Q5 low : 0 hi :1 →

Fh-khz	Q5	Q4	Q3	Q2	Q1
<31.00	0	0	0	0	0
31.00 ~33.00	0	0	0	0	0
33.00~ 36.30	0	1	0	0	0
36.30 ~40.30	0	1	1	0	0
40.30 ~45.00	1	0	0	0	0
45.00 ~50.20	1	0	0	1	1
50.20 ~56.80	1	0	1	1	0
56.80 ~62.00	1	1	0	0	1
62.00 ~66.00	1	1	0	1	1
66.00 ~71.20	1	1	1	0	0
71.20 ~81.00	1	1	1	0	1
81.00 ~88.00	1	1	1	1	0
> 81.00	1	1	1	1	1

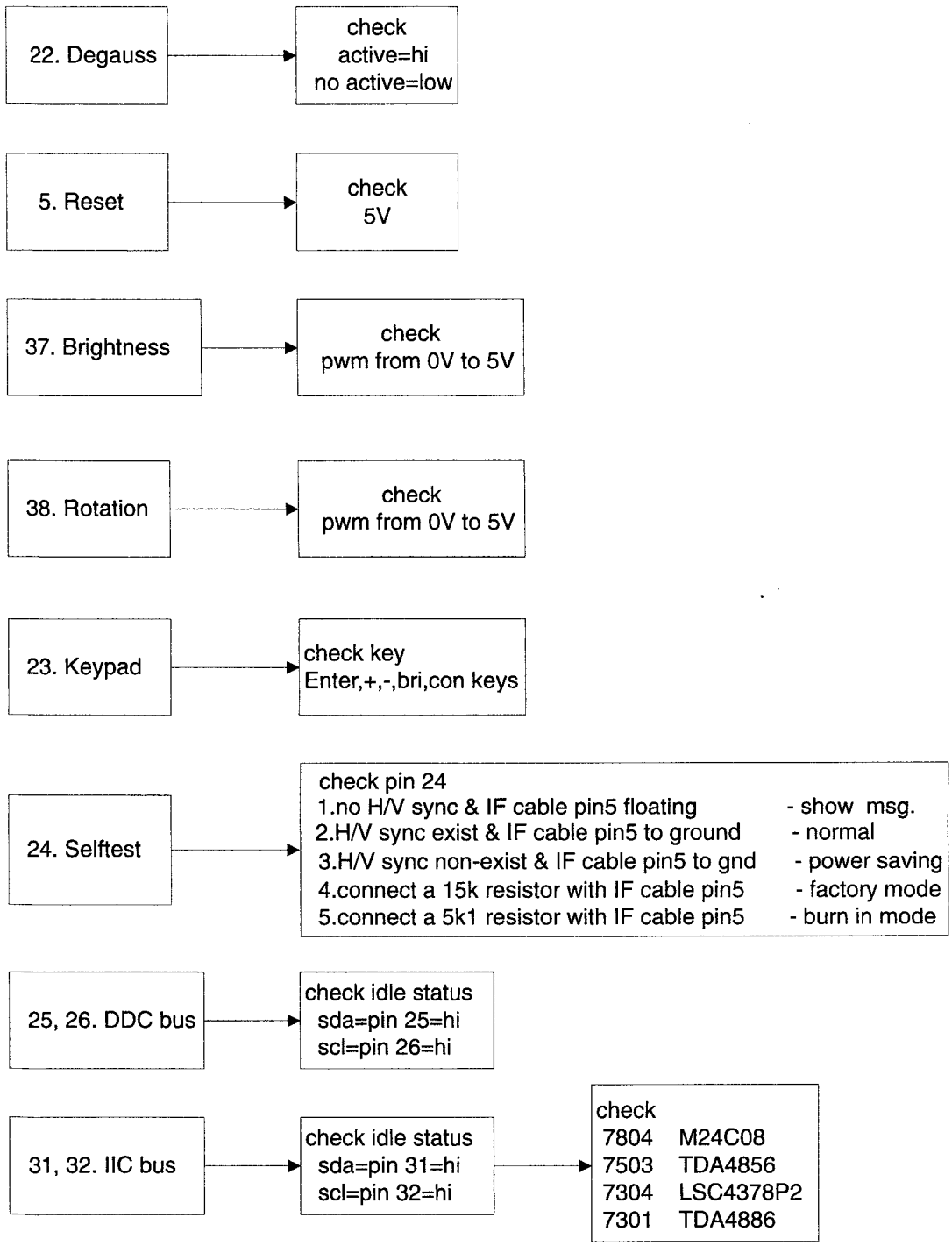
3. ABL-Adj → check pin 3 pwm from 0V to 5V

18. Hunlock → check pin18 normal=Hi blank=low

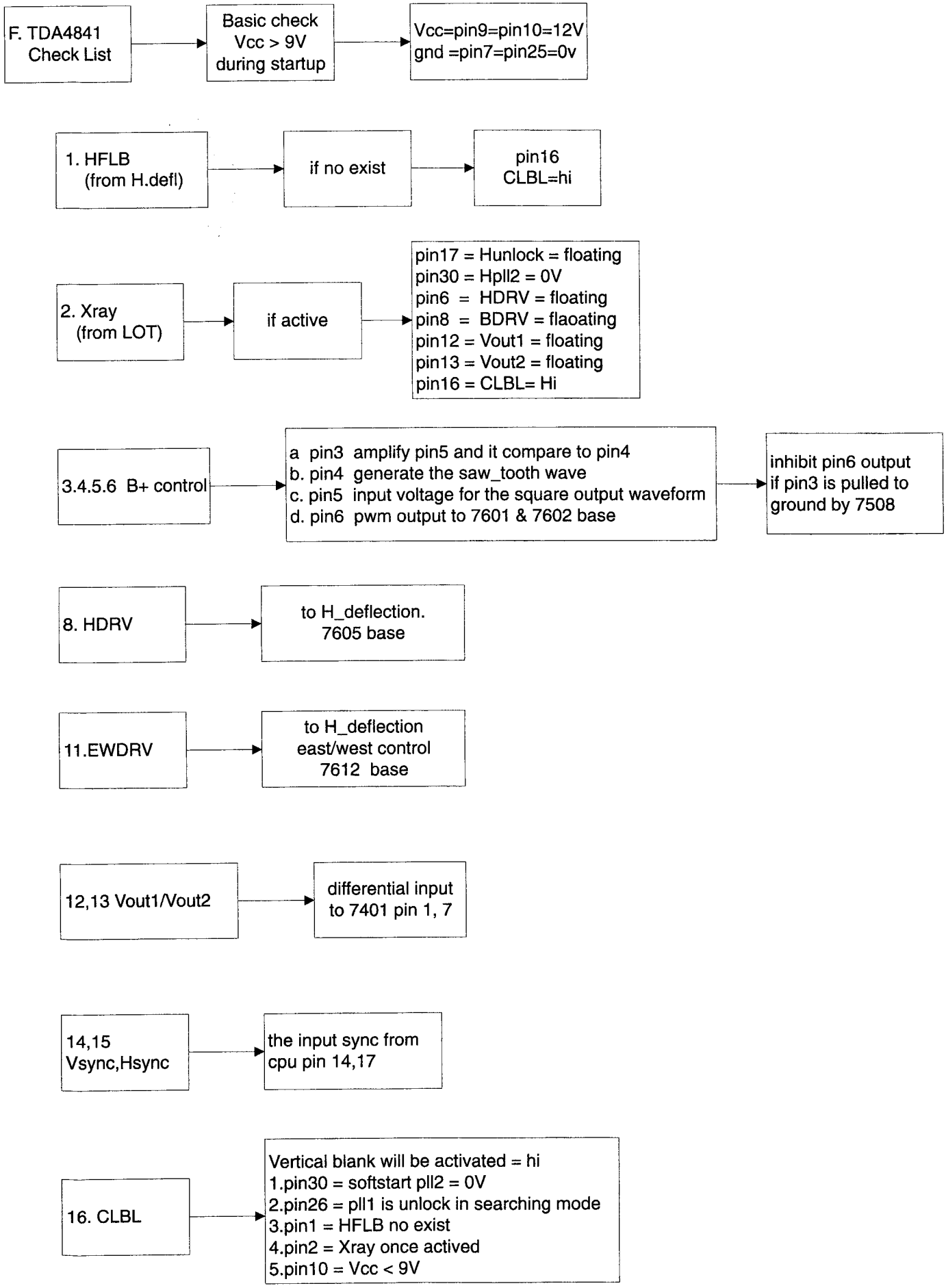
27, 20 P.S. LED → check pin20/27 →

	pin27	pin20
normal	hi	hi
standby	hi	low
off	low	hi

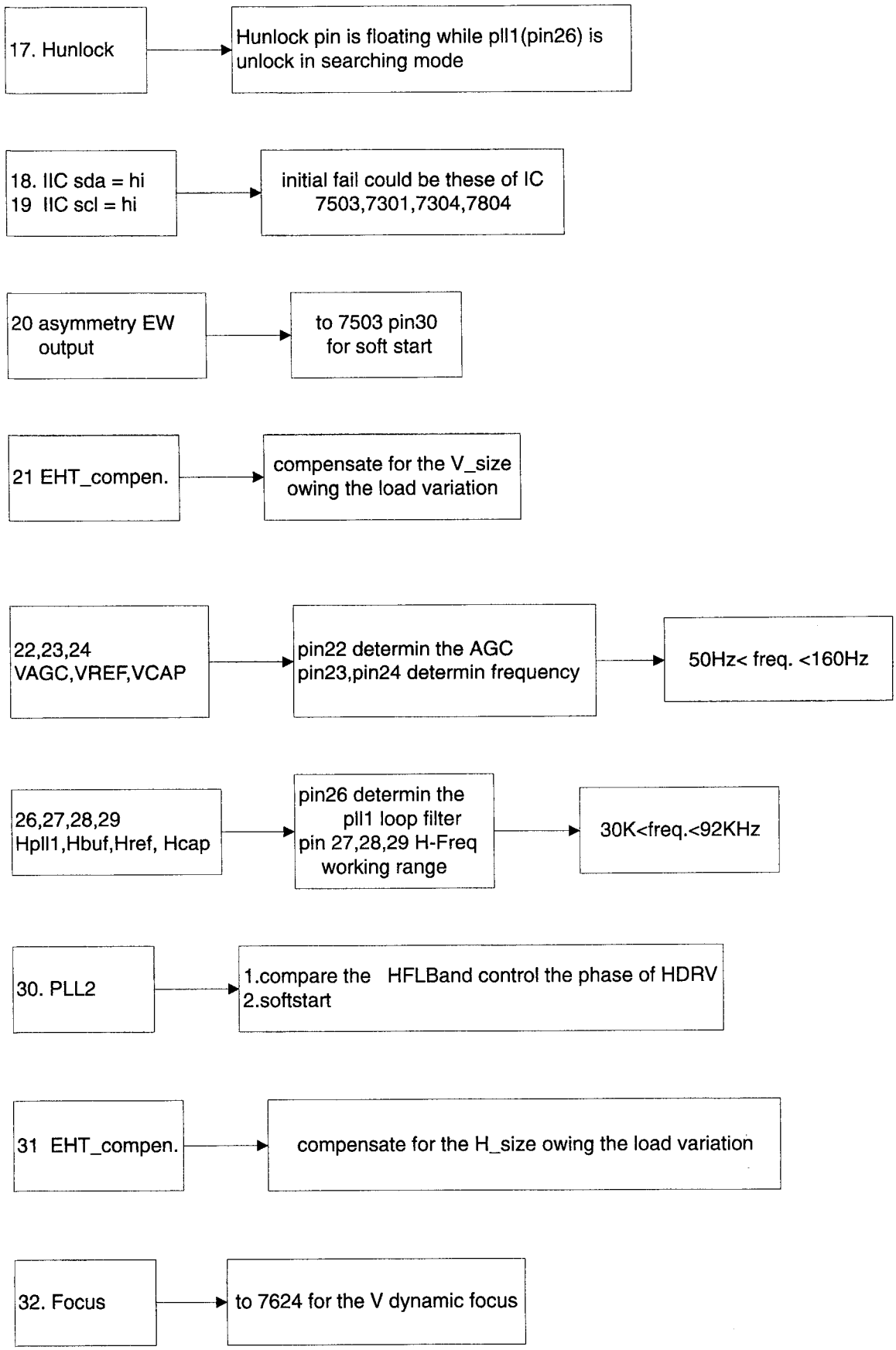
Repair Flow Chart (Continued)



Repair Flow Chart (Continued)


F. TDA4841 Check List
Basic check Vcc > 9V during startup
Vcc=pin9=pin10=12V gnd =pin7=pin25=0v
1. HFLB (from H.defl)
if no exist
pin16 CLBL=hi
2. Xray (from LOT)
if active
pin17 = Hunlock = floating
pin30 = Hpll2 = 0V
pin6 = HDRV = floating
pin8 = BDRV = flaoating
pin12 = Vout1 = floating
pin13 = Vout2 = floating
pin16 = CLBL= Hi
3.4.5.6 B+ control
a pin3 amplify pin5 and it compare to pin4
b. pin4 generate the saw_tooth wave
c. pin5 input voltage for the square output waveform
d. pin6 pwm output to 7601 & 7602 base
inhibit pin6 output if pin3 is pulled to ground by 7508
8. HDRV
to H_deflection. 7605 base
11.EWDRV
to H_deflection east/west control 7612 base
12,13 Vout1/Vout2
differential input to 7401 pin 1, 7
14,15 Vsync,Hsync
the input sync from cpu pin 14,17
16. CLBL
Vertical blank will be activated = hi
1.pin30 = softstart pll2 = 0V
2.pin26 = pll1 is unlock in searching mode
3.pin1 = HFLB no exist
4.pin2 = Xray once actived
5.pin10 = Vcc < 9V

Repair Flow Chart (Continued)


17. Hunlock
Hunlock pin is floating while pll1(pin26) is unlock in searching mode
18. IIC sda = hi
19 IIC scl = hi
initial fail could be these of IC 7503,7301,7304,7804
20 asymmetry EW output
to 7503 pin30 for soft start
21 EHT_compen.
compensate for the V_size owing the load variation
22,23,24 VAGC,VREF,VCAP
pin22 determin the AGC pin23,pin24 determin frequency
50Hz< freq. <160Hz
26,27,28,29 Hpll1,Hbuf,Href, Hcap
pin26 determin the pll1 loop filter pin 27,28,29 H-Freq working range
30K<freq.<92KHz
30. PLL2
1.compare the HFLBand control the phase of HDRV
2.softstart
31 EHT_compen.
compensate for the H_size owing the load variation
32. Focus
to 7624 for the V dynamic focus

PHILIPS

GS - 107B2 General Specification (Sheet 590)

FEATURES / BENEFITS

-Light-Frame™

Brightness and sharpness boost on user selectable windows. User interface application for Windows 95/98/NT/2000 and MacOS 8/9. Supported languages: English, French, German, Spanish, Dutch, Portuguese (for Windows version) and English, French, Spanish, German (for MacOS).

- Extremely high MTBF (over 75K Hours, exclude. CRT).

- User friendly OSD display for mode identification and adjustment

- Professional look, with non-flammable cabinet (94V-0).

- Better display performance.
  . Flat/square display tube
  . Finer CRT dot pitch (0.25 mm)
  . Full screen size application
  . Real multi-freq.

- Power saving management system.

- VESA DDC1 /2B

- Picture tilt control

- Low emission TCO99

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CLASS NO.	17" CM2400 GS-III 107B2 CMTR					
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636				
NAME S.C.WU	SUPERS.	23	590 — 1	10		A4
TY / CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.				

PHILIPS

INDEX

1.0 Introduction

2.0 General description
2.1 General condition

3.0 Electrical characteristics
3.1 Signal interface
3.1.1 Input requirements
3.1.2 Signals input.
3.1.3 Factory pre-set modes

3.2 Timing requirements
3.2.1 Horizontal scanning
3.2.2 Vertical scanning

3.3 Power supply

3.4 Power saving management system

3.5 CRT description

3.6 RGB amplifier
3.6.1 Video amplifier
3.6.2 Brightness and contrast

3.7 Variation of image size

3.8 Degaussing

3.9 Phosphor protection

3.10 Low emission requirements (TCO-99)

3.11 Display data channel : DDC1/2B (VESA STANDARD)

4.0 Display

4.1 Display resolution

4.2 Image size

4.3 Image centering deviation

4.4 Picture shift control range

4.5 Geometric distortions

4.6 Picture tilt

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4.7 Image non-linearity

4.8 Mis-covergence

4.9 Focus check

4.10 Luminance uniformity

4.11 White color adjustment

4.12 Color tracking on full white pattern

4.13 Purity

4.14 Moir

5.0 Mechanical characteristics

5.1 User controls (at front)

5.2 Connector and cables
5.2.1 Power Cord
5.2.2 Signal Cable

5.3 Foot Assembly

6.0 Connector and cable

7.0 Environmental characteristics

7.1 Susceptibility of display to external environment
7.1.1 Operation limits
7.1.2 Transportation packages

7.2 Display disturbance from external environment
7.2.1 ESD disturbances

7.3 Display disturbance to external environment
7.3.1 Ionizetic radiation
7.3.2 EMI

8.0 Reliability

8.1 Mean time between failures

9.0 Quality assurance requirements

9.1 Acceptance test

10.0 Serviceability

CLASS NO.	17" CM2400 GS-III 107B2 CMTR	
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636

NAME S.C.WU	SUPERS.	23	590 — 3	10		A4
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1.0 Introduction

This document is related to the 17" AUTOSCAN color monitor and max. resolution:1280 X 1024 by 85HZ refresh rate

2.0 General description

This AUTOSCAN analog colour monitor is specified as a display peripheral within an IBM compatible PC.

The AUTOSCAN analog colour monitor is to operate at
H: 30 to 92.0 KHz V: 50 to 160 Hz
can be applied to all RGB analog computers within this scanning frequencies.

The AUTOSCAN analog colour monitor is intended to be a finished product, basically adisplay device mounted inside a plastic enclosure which provides the aesthetic, mechanical,ergonomic and safety requirements.

2.1 General condition

The unit will produce a usable image after switching-on, measurements are to be carried out with a full stabilised set after about 30 minutes warm-up at room ambient temp. of 25C.
Repetitive power on/off cycles are allowed though should be avoided within 4 sec.

3.0 Electrical characteristics

3.1 Signal interface

This AUTOSCAN analog colour display has an analog video interface to operates at a multi-frequencies timing in several display modes.

3.1.1 Input requirements

A. Input signals

Video - 0.7 Vp-p 75 ohms (for individual of R,G and B signals must not deviate 0.015 Vp-p from each other for balance of white pattern)

Sync - TTL level
(between 0 and 0.6 V to be considered as low level, between 2.3 and 5.0 V as high level)

B. Impedance

Video - Terminated with 75 ohms
Sync - Terminated with 4.7K ohms pull-down resistors.

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3.1.2 Signals input

The input video signals are applied to the display device through a video cable which isfixed to the monitor (flying cable length 1.5M).

Video input cable :
15 pin D-shell connector type with pin assignment as follows :

Pin assignment of 15P D-SUB connector

Pin No.	Assignment
P 1	Red video input
P 2	Green video input
P 3	Blue video input
P 4	Ground
P 5	Self-test
P 6	Red video ground
P 7	Green video ground
P 8	Blue video ground
P 9	Not connected
P10	Ground
P11	Ground
P12	Bi-directional data (SDA)
P13	H SYNC
P14	V SYNC
P15	DDC Data CLOCK (SCL)

3.1.3 Factory pre-set modes:

PRESET VIDEO RESOLUTION AND SYNC. POLARITIES

	Resolution modes	V. freq.	H. freq.	H.	V.
1.	720 x 400	75.087 Hz	31.469 KHz	-	+
2.	800 x 600	75.000 Hz	46.875 KHz	+	+
3.	800 x 600	85.061 Hz	53.674 KH	+	+
4.	1024 x 768	70.069 Hz	56.476 KHz	-	-
5.	1024 x 768	75.029 Hz	60.023 KHz	+	+
6.	1024 x 768	84.997 Hz	68.677 KHz	+	+
7.	1280 x 1024	75.025 Hz	79.976 KHz	+	+
8.	1280 x 1024	85.024 Hz	91.146 KHz	+	+

3 .2 Timing requirements

The pre-set timing table are shown as below
Timing Table : 1- 8

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TIMING FOR GS 107B2 " 92KHz

(VESA monitor timing standard Version 1.0 Release 0.8)

REFERENCE PATTERN GENERATOR : CHROMA 2200 or2250

TABLE 1: 31.8465 KHz/75.087Hz, 720 X 400, pixel=28.325 MHz

Horizontal		Vertical	
Frame border=	0	Frame border=	0
Total size =	31.744us	Total size =	14.268 ms
Display size=	25.422us	Display size=	12.711 ms
Rear porch =	1.907us	Rear porch =	1.112 ms
Sync width =	3.813us	Sync width =	0.064 ms
Sync polarity=	-	Sync polarity=	+

TABLE 2: 46.875 KHz/75.000Hz, 800 X 600, pixel=49.500 MHz

Horizontal		Vertical	
Frame border=	0	Frame border =	0
Total size =	21.333us	Total size =	13.333 ms
Display size=	16.162us	Display size=	12.800 ms
Rear porch =	3.232us	Rear porch =	0.448 ms
Sync width =	1.616us	Sync width =	0.064 ms
Sync polarity=	+	Sync polarity=	+

TABLE 3: 53.674 KHz/85.061Hz, 800 X 600, pixel=56.250 MHz

Horizontal		Vertical	
Frame border=	0	Frame border =	0
Total size =	18.631us	Total size =	11.756 ms
Display size=	14.222us	Display size=	11.179 ms
Rear porch =	2.702us	Rear porch =	0.503 ms
Sync width =	1.138us	Sync width =	0.056 ms
Sync polarity=	+	Sync polarity=	+

TABLE 4: 56.476 KHz/70.069Hz, 1024X 768, pixel=75.000 MHz

Horizontal		Vertical	
Frame border=	0	Frame border=	0
Total size =	17.707us	Total size =	14.272 ms
Display size=	13.653us	Display size=	13.599 ms
Rear porch =	1.920us	Rear porch =	0.513 ms
Sync width =	1.813us	Sync width =	0.106 ms
Sync polarity=	-	Sync polarity=	-

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00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636	
NAME S.C.WU	SUPERS.	23	590 — 6 / 10 / A4
TY / CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.	

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TABLE 5: 60.023 KHz/75.029Hz, 1024X 768, pixel=78.750 MHz

Horizontal		Vertical	
Frame border=	0	Frame border=	0
Total size =	16.660us	Total size =	13.328 ms
Display size=	13.003us	Display size=	12.795 ms
Rear porch =	2.235us	Rear porch =	0.466 ms
Sync width =	1.219us	Sync width =	0.050 ms
Sync polarity=	+	Sync polarity=	+

TABLE 6: 68.677 KHz/84.997Hz, 1024X 768, pixel=94.500 MHz

Horizontal		Vertical	
Frame border=	0	Frame border=	0
Total size =	14.561us	Total size =	11.756 ms
Display size=	10.836us	Display size=	11.183 ms
Rear porch =	2.201us	Rear porch =	0.524 ms
Sync width =	1.016us	Sync width =	0.044 ms
Sync polarity=	+	Sync polarity=	+

TABLE 7: 79.976 KHz/75.025Hz, 1280 X1024, pixel=135.000MHz

Horizontal		Vertical	
Frame border=	0	Frame border=	0
Total size =	12.504us	Total size =	13.329 ms
Display size=	9.481us	Display size=	12.804 ms
Rear porch =	1.837us	Rear porch =	0.475 ms
Sync width =	1.067us	Sync width =	0.038 ms
Sync polarity=	+	Sync polarity=	+

TABLE 8: 91.146 KHz/85.024Hz, 1280 X 1024, pixel=157.500 MHz

Horizontal		Vertical	
Frame border=	0	Frame border=	0
Total size =	10.971us	Total size =	11.761 ms
Display size=	8.127us	Display size=	11.235 ms
Rear porch =	1.422us	Rear porch =	0.483 ms
Sync width =	1.016us	Sync width =	0.033 ms
Sync polarity=	+	Sync polarity=	+

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CLASS NO. | 17" CM2400 GS-III 107B2 CMTR | 8639 000 10636

00-06-28

TYPE : 107B20/74H
BRAND : PHILIPS (92K)

NAME S.C.WU | SUPERS. | 23 | 590 — 7 | 10 | A4

TY | CHECK | DATE 00-06-28 | Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

2838 100 05424

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Preload modes: 34

1.	1792	1334	60	Hz	83.64	K
2.	1856	**1392**	60	Hz	86.33	K
3.	1920	1440	60	Hz	90.00	K
4.	640	350	70	Hz	31.469	K
5.	640	350	85	Hz	37.861	K
6.	640	480	**100.1**	Hz	50.6	K (SNI)
7.	640	480	60	Hz	31.469	K
8.	640	480	72.8	Hz	37.861	K
9.	640	480	75	Hz	37.5	K
10.	640	**480**	85	Hz	43.269	K
11.	720	400	70	Hz	31.469	K
12.	720	400	85	Hz	37.927	K
13.	800	600	100.1	Hz	63.9	K (SNI)
14.	800	**600**	60.3	Hz	37.879	K
15.	800	600	72.12	Hz	48.077	K
16.	800	600	75	Hz	46.875	K
17.	800	600	85	Hz	53.674	K
18.	832	**624**	**74.6**	Hz	49.725	K (MAC)
19.	1024	768	60	Hz	48.363	K
20.	1024	768	70	Hz	56.476	K
21.	1024	768	75	Hz	60.0	K
22.	1024	768	84.99	Hz	68.677	K
23.	1152	**864**	**75**	Hz	67.5	K
24.	1152	864	85	Hz	77.1	K
25.	1152	870	75	Hz	68.681	K (MAC)
26.	1152	900	76	Hz	71.8	K (SUN)
27.	1280	**1024**	60	Hz	63.981	K
28.	1280	1024	75	Hz	79.976	K
29.	1280	1024	85	Hz	91.146	K
30.	1280	960	60	Hz	60.0	K
31.	1280	**960**	**85**	Hz	85.938	K
32.	1600	1200	60	Hz	75.00	K
33.	1600	1200	65	Hz	81.25	K
34.	1600	1200	70	Hz	87.5	K

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CLASS NO.	17" CM2400 GS-III 107B2 CMTR				
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636			
NAME S.C.WU	SUPERS.	23	590 — 8	10	A4
TY / CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

3.2.1 Horizontal scanning

Scanning frequency : 30 - 92 KHz,
H-shift range : 20 mm min.
Retrace time : Less than 2.50 us.

3.2.2 Vertical scanning

Scanning frequency : 50 - 160 Hz
V-shift range : 10 mm Min.

3.3 Power supply

The display device maintains the specified performance in the range described as below :

Type	Mains current	Mains Voltage	Mains freq.
	1.6A max.	90 - 264 VAC	47-63Hz

Power consumption : 100 Watts Max.
Power cord length : 1.5M
Power cord type : 3 leads detachable power cord with protective earth plug

3.4 Power saving management system

MODE	SIGNAL			POWER	RECOVERY TIME
	H-SYNC	V-SYNC	VIDEO		
ON	ACTIVE	ACTIVE	ACTIVE	< 100W	NA
STAND-BY	INACTIVE	ACTIVE	BLANKED	< 15W	~ 3 SEC.
SUSPEND	ACTIVE	INACTIVE	BLANKED	< 15W	~ 3 SEC.
OFF	INACTIVE	INACTIVE	BLANKED	< 3W	~ 7 SEC

3.5 CRT Description

This display unit employs a high resolution CRT complying with the following specifications :

Dimensions : 17 inches
flat/square screen.
Pitch : 0.25mm dotted
Deflection angle : 90 degrees
Light transmission : 53.5%
Face treatment : IRIS-HC coating
Implosion protection: CRT Pre-stressed banded Mini-P shrunk rimband
EHT : 26.0KV
Visible screen area: 325 mm x 245 mm

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3.6 RGB Amplifier

3.6.1 Video amplifiers

Dot Rate : 157.5 MHz

Over / undershoot : 10% Max. (Transient response)

Sag (background uniformity) : 5% Max. (pulses of 0.70H)

3.6.2 Brightness and contrast

Reference mode 68.7K/85Hz full white pattern.

Brightness	Contrast	Light output (full white)
Minimum	Minimum	< 1.0 FL
Center	Maximum	30+/- 5 FL

3.7 Variation of image size

Due to brightness change from 3 to 30 FL (Max.) : < 1.0 mm

Due to aging (0 to 40C) : < 1.0 %

Due to mains voltage variation : < 1.0 %

3.8 Degaussing

An automatic degaussing circuit is provided which requires no intervention. The degaussing activated at the time of switch-on or switch-on again or pressing manual degaussing key after switching-off degaussing circuits for longer than 30 minutes.

3.9 Phosphor protection

The display device is sufficiently protected against the burning of phosphors in case of repetitive power cycling or absence of horizontal deflection.

3.10 Low emission requirements (TCO-99)

Items	Band I ELF (rms)	Band II VLF (rms)
Alternating Electric Field	MPR-II 25 V/M TCO-9910	MPR-II 2.5V/M TCO-991.0
Magnetic Field	MPR-II 250 nT TCO-99 200 nT	MPR-II 25 nT TCO-9925 nT
E.S.P	≤ +/-500 V	

Band I : 5 to 2K Hz.

Band II : 2K to 400K Hz.

Test procedure according to Low emission test method.

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3.11 Display data channel : DDC1/2B (VESA STANDARD)

The DDC HEX Data should be written into DDC memory inside the CPU IC (7802) by EEPROM writer or equivalent method.

4.0 Display image (CRT facing east)

The monitor is aligned in a magnetic cage having the following magnetic field components :

Northern Hemisphere : H = 0, V = +0.43 +/- 0.05G, Z = 0
Southern Hemisphere : H = 0, V = -0.52 +/- 0.05G, Z = 0

Conditions for visual testing, unless otherwise stated:

Input video signal	- 700 mVp-p cross hatch
Brightness control	- 50%
Contrast control	- Adjusted to 30+/- 5 FL of luminance with full white pattern

4.1 Display resolutions

See 3.1.3

4.2 Image size (Factory pre-set modes only)

The dimensions of guaranteed display area to be measured along the picture center of horizontal and vertical axis of the screen as listed below: (preset modes only, refer to fig. 1/fig 2)

Width : 306 +/- 3 mm .(fig 1)
Height : 230 +/- 3 mm .(fig 1)

4.3 Image centering deviation (Factory preset modes only)

With respect to fig. 2, the target relationships are the following :

|A - B| <= 5 mm |C - D| <= 5 mm

Note : This centering is adjustable by the end-user.

4.4 Picture shift control range

H-shift range : 20 mm min. (+/- 5mm,from center to each side)
V-shift range : 10 mm min. (+/- 2mm,from center to each side)

4.5 Picture tilt

With respect to Fig. 3, Tilt to be measured on extremes of center line from bezel.

Tilt : < = 2 mm

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4.6 Geometric distortions

It is acceptable that pincushion, trapezoid, rhomboid, rotation and various waves distortions must remain within the limits of tolerance as in fig. 4,

A ,	B	2.0mm
C ,	D	2.0mm

The waviness of any vertical or horizontal shall be less than 1.0 mm over a 50 mm distance.

4.7 Image non-linearity pattern with
10 equal blocks along horizontal axis,
8 equal blocks along vertical axis.

Two Adjacent block : 6 % Max (each horizontal and vertical)
Overall : 10 % Max (each horizontal and vertical)

$$\text{H. linearity} = \frac{Xmax. - Xmin}{Xmax.} \times 100\%$$

$$\text{V. linearity} = \frac{Ymax. - Ymin}{Ymax.} \times 100\%$$

4.8 Mis-convergence
The maximum convergence error to be measured on a white spot or white display line to represents the maximum distance between the energy centers of any two primary colors.
(See Fig. 6)
Mis-Convergence SPEC.

CRT Pitch	0.25mm
Zone A	0.25
Zone B	0.35
Center	0.15

4.9 Focus check (with 79.99KHz/75Hz,1280 x 1024 mode)

Generate "@" characters (pattern as fig 7)to cover entire of the picture area (display size respect to fig. 1), adjust brightness control to click and contrast near center (~ 30FL full white) the characters should be clearly identified in all display area.

4.10 Luminance uniformity

condition : With full white pattern, set contrast control at max. and adjust brightness control to get 30FL in center.the max. deviation to the rest of the screen shall not exceed 25% of entire screen with any point.

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4.11 White color adjustment

Based on the 1931 CIE chromaticity (colour triangle) diagram (x,y coordination). coordination of white display on screen center should be:

for 9300 degreeK	X	= 0.283	+/- 0.015
	Y	= 0.297	+/- 0.015
for 6500 degreeK	X	= 0.313	+/- 0.015
	Y	= 0.329	+/- 0.015

Check conditions :
Set brightness control at 50% position and contrass at maximum.

4.12 Color tracking on full white pattern

Ref. to white balance alignment result and set brightness at 50%, adjust contrast control from 5FL to max. position, the colour coordinate should not deviate more than following tolerance when compare to display center:

X= X nominal +/- 0.015
Y= Y nominal +/- 0.015

4.13 Purity
Test patterns : Full White
Conditions:As stated in item 4.0, the purity must be checked under specific destinations of earth magnetic environments and the monitor to be well degaussed.
After warming-up time of 30 min., no coloured stains may occur in above four patterns.

4.14 Moir
Condition: Displaying a **full white pattern**, at any pre-set mode the display size of the sets to be set as stated in "Fig. 1".
No serious moir'e is visible after adjustment via OSD moir control function and test is toset brightness at center(50%),contrast at Max
. However the OSD moir data of V-moir should be default 30 for outgoing
Increasing the moir control value will have side effect on resolution (degrade focus),and phenomenon of flicker and sawtooth.

5.0 Mechanical characteristics

5.1 User controls (all at front) Right to left
- Power ON/OFF
- Enter
- Up/Down
- Right
- Left

6 .0 Connectors and cables

6.1.1 Power cord (plugable) type : Wall Plug ,non shielded and non-attached.

Length : 1.5 m +/- 50 mm . Plug curved at 90°.

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6.1.2 Signal cable

Length of video : 1.5 m +/- 50 mm flying in 15pins D-shell.

7.0 Environmental characteristics

The following sections to define the interference and susceptibility condition limits that might occur between external environment and the display device.

7.1 Susceptibility of display to external environment

7.1.1 Operating limits

A). Temperature : 0°C to 40°C
Humidity : 10 to 90% (W/O condensation)
Air pressure : 700 ~ 1100 mbar

B). Non-operating limits (storage)
Temperature : -25°C to 65°C
Humidity : 5 to 95 % (W/O condensation)
Altitude : 300 to 1100 mbar

7.1.2 Transportation packages

A) Carton box
: 496(W) x 518 (D) x 495 (H) mm.

B) Transportation conditions
(see table, shown as below)

B-1 Transportation standards

TEST	Standard reference	Philips severity
Drop 1C-3E-6F		Gross weight (Kg) NSTA 18.1 Kg Drop height (cm) 76 cm
Random vibration		Truck spectrum, 0.73 Grms, 30 min/axis, 3 axes
Shock (non-oper) half sine		120G<3msec, 6 shocks. * G value measurement filter: 1000Hz * Exclude CRT impurity.

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B-2 Container loading

Q'ty	Container size					
	40Feet W/Pallet		20Feet W/Pallet		High cube 40 Feet W/Pallet	
	Yes	No	Yes	No	Yes	No
Layers	4	4	4	4	4	4
Sets per layer	4	4	4	4	4	4
Sets per block	16	16	16	16	16	16
Blocks per container	24	24	10	10	24	24
Total set	384	384	160	160	384	384

7.2 Display disturbances from external environment

7.2.1 ESD Disturbances
According to IEC65 (also refer to IEC801-2 for detail).

7.3 Display disturbances to external environment

The disturbances induced by the display and tolerated by the environment are defined as follows :

7.3.1 Ionizetic radiation
Completely fulfilled International Commission of Radio logical Protection (ICRP) requirement 0.5 mr/hrs.
Actually the set can reach 0.1 mr/hrs.

7.3.2 Safety and EMI requirements

Safety	- USA	:UL 1950
	-CANADA	:CSA C22.2 NO.950-M89
	-NORDIC	:IEC60950
		:EN60950
		:EMKO TSE (74SEC) 207/94
	-GERMANY	:ZHI/618 (GS)
		:ISO 9241-3, 9241-7, 9241-8
EMI	-USA	:FCC PART 15 Class B
	-CANADA	:D.O.C. Class B
	-CE	:EN55022 CLASS B
	-JAPAN	:VCCI Class B
EMS	-CE	:EN50082-1
		:EN60555-2
LOW EMISSION		:TCO-99

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7.3.3 X-RAY radiation requirement /regulation

-USA/CANADA :DHHS 21 CFR, CHAPTER 1,SUBCHAPTER J
-GERMANY :RONTGEN VERORDNUNG ROV 1987.01.08

X-ray explosure at 5cm distance from any point of the external surface must not exceed 0.1 mR/H.

8.0 Reliability

8.1 Mean time between failures
MTBF to be calculated according to Military standard MIL-HDBK-217C.

MTBF >=75,000 Hours (Excluding CRT)

$$\text{PRACTICE of MTBF} = \frac{\text{TOTAL HRS (POWER ON) X TOTAL SETS}}{\text{NBR. OF FAILURED SETS}}$$

9.0 Quality assurance requirements

9.1 Acceptance test

According to MIL-STD-105D level II,
AQL : 0.65 (Major)
2.5 (Minor)

Customer acceptance :
criteria : UAW0377/00

10.0 Serviceability

The service ability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

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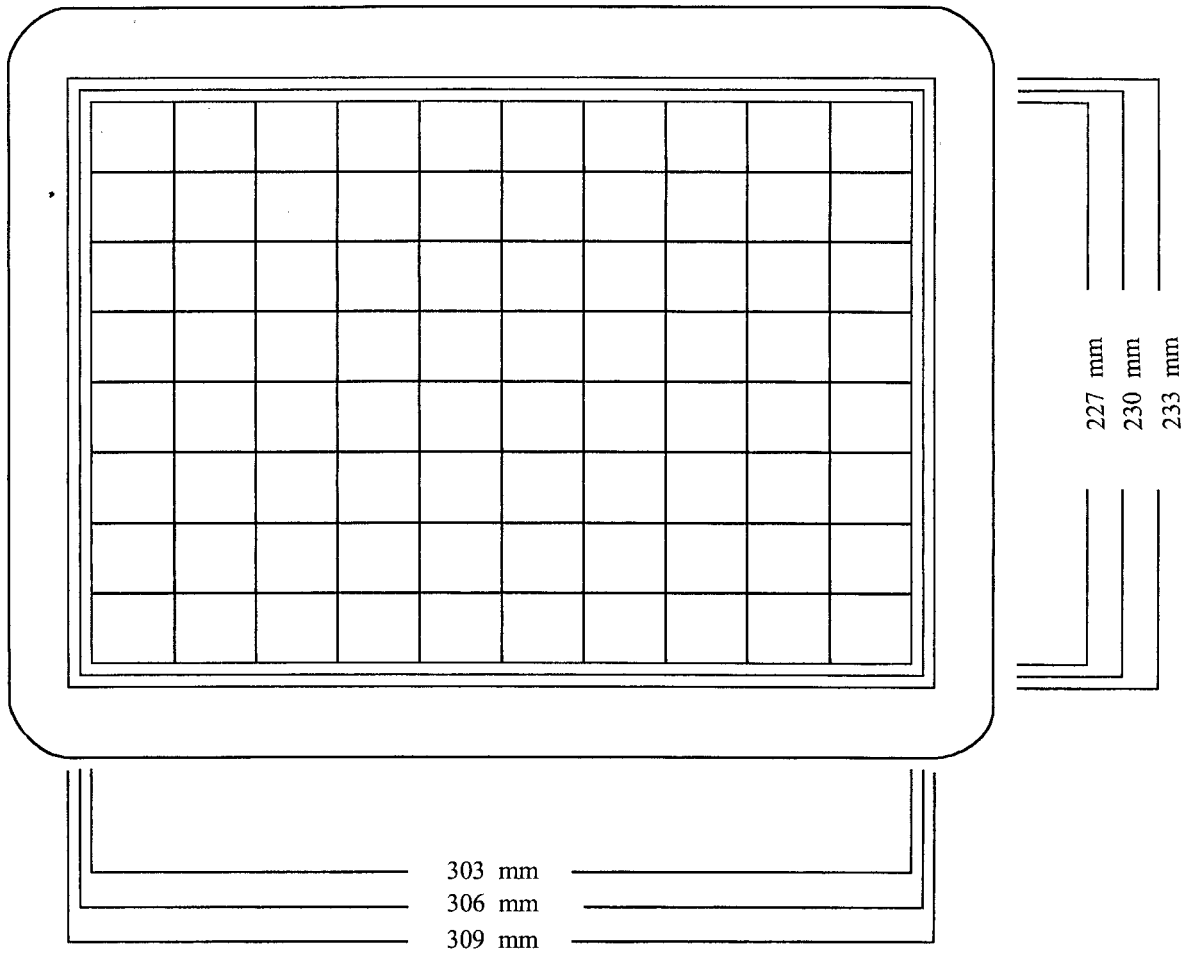

FIG-1 IMAGE DIMENSION

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CLASS NO.	17" CM2400 GS-III 107B2 CMTR				
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636			
NAME S.C.WU	SUPERS.	23	590 — 17	10	A4
TY CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

2838 100 05424

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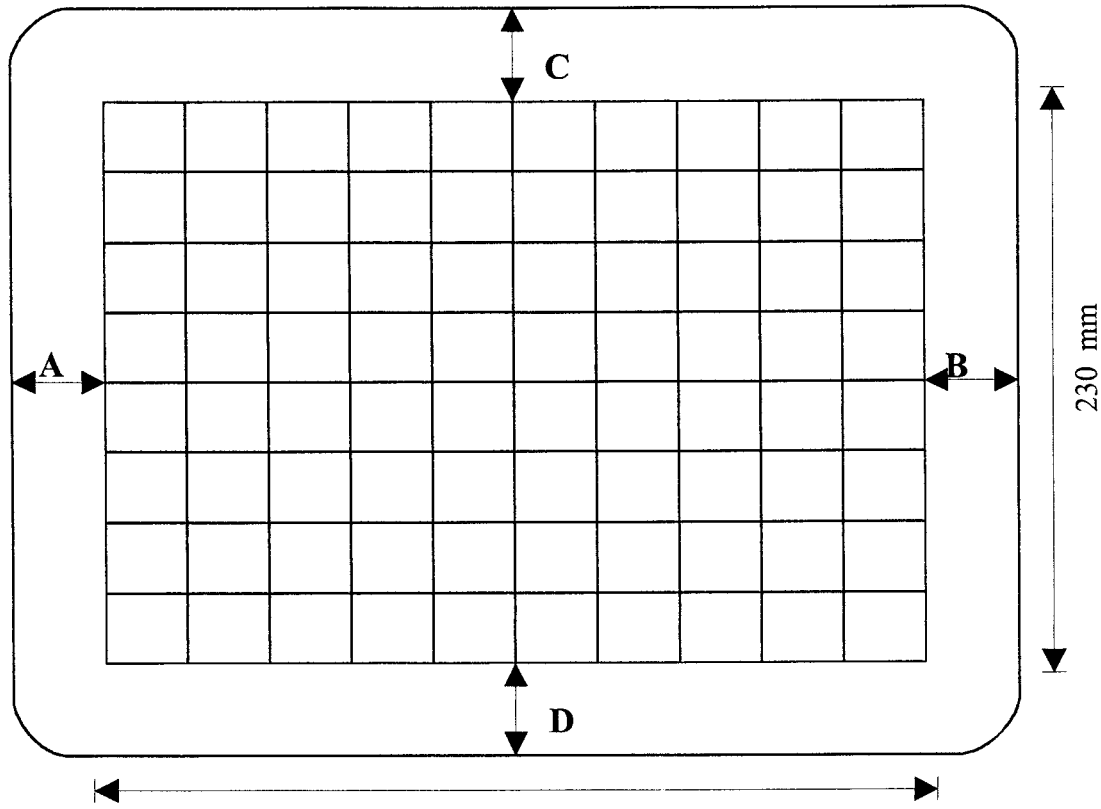

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|A-B| AND |C-D| < 5 mm

FIG-2 IMAGE CENTERING

CLASS NO.	17" CM2400 GS-III 107B2 CMTR	
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636
NAME S.C.WU	SUPERS. 23	590 — 18 10 A4
TY CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

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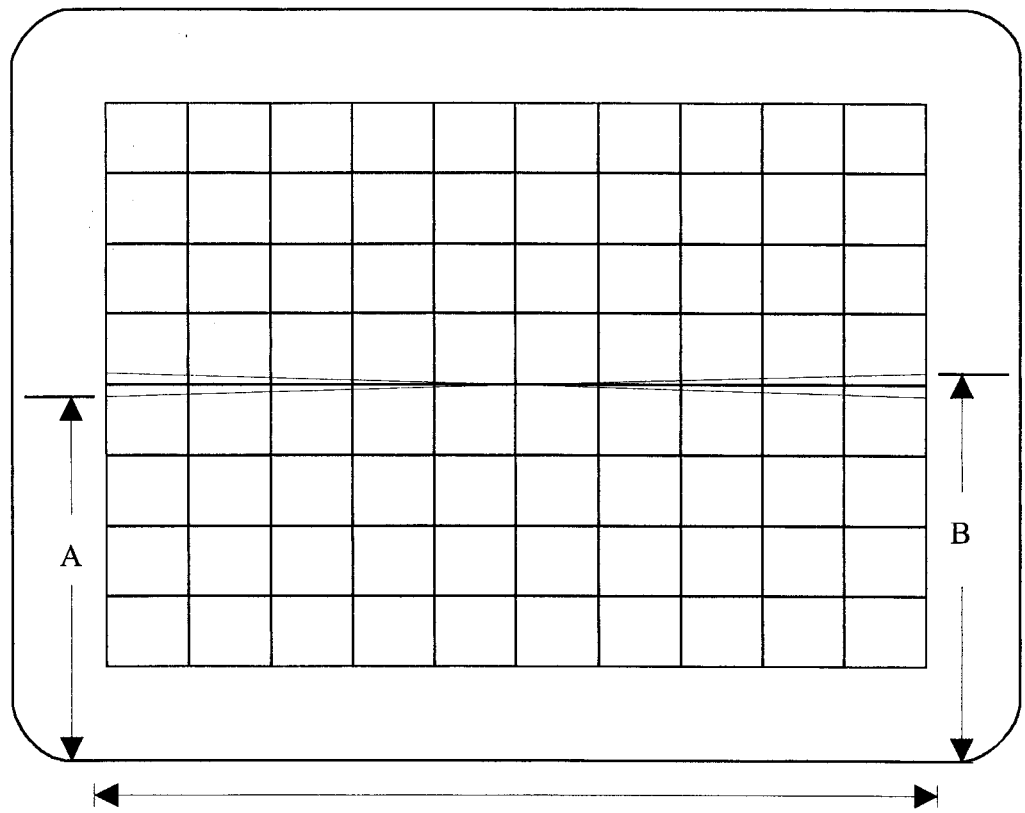

$|A-B| < 2$ mm

FIG-3 IMAGE ROTATION

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CLASS NO.	17" CM2400 GS-III 107B2 CMTR				
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636			
NAME S.C.WU	SUPERS.	23	590 — 19	10	A4
TY / CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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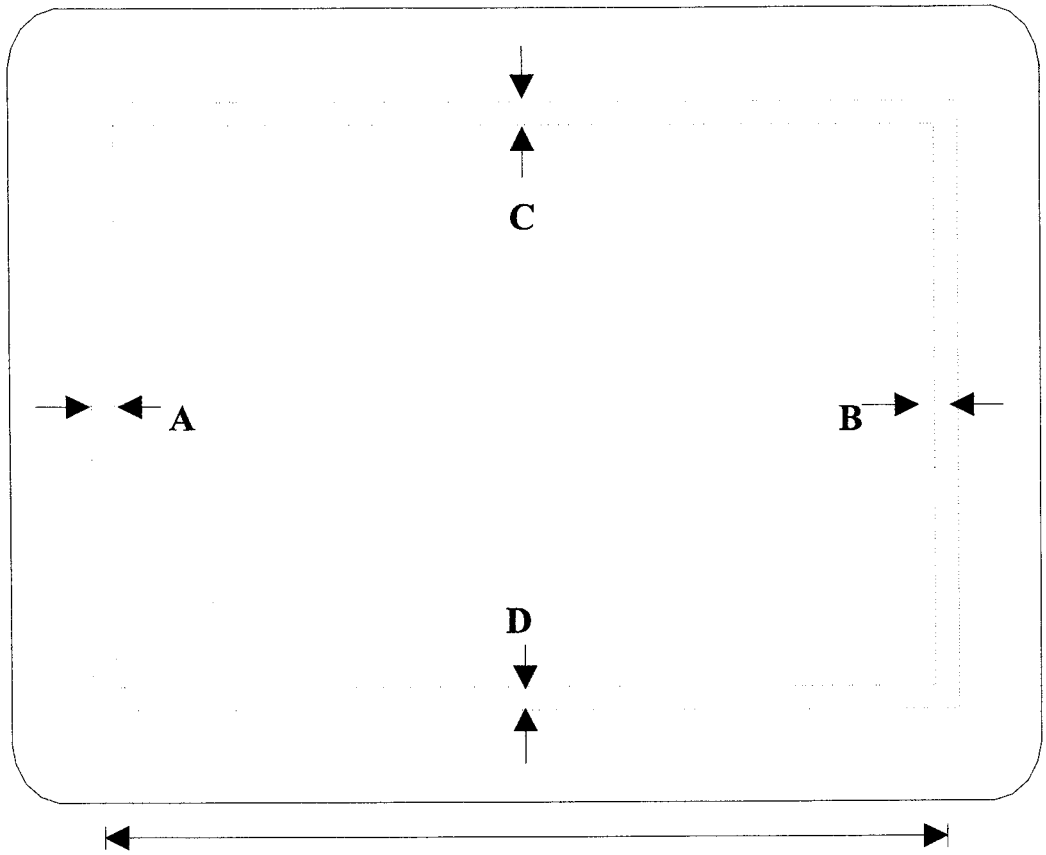

A, B <= 2.0 mm C, D <= 2.0 mm

FIG-4 IMAGE GEOMETRY

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CLASS NO.	17" CM2400 GS-III 107B2 CMTR	
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636
NAME S.C.WU	SUPERS. 23	590 — 20 10 A4
TY CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

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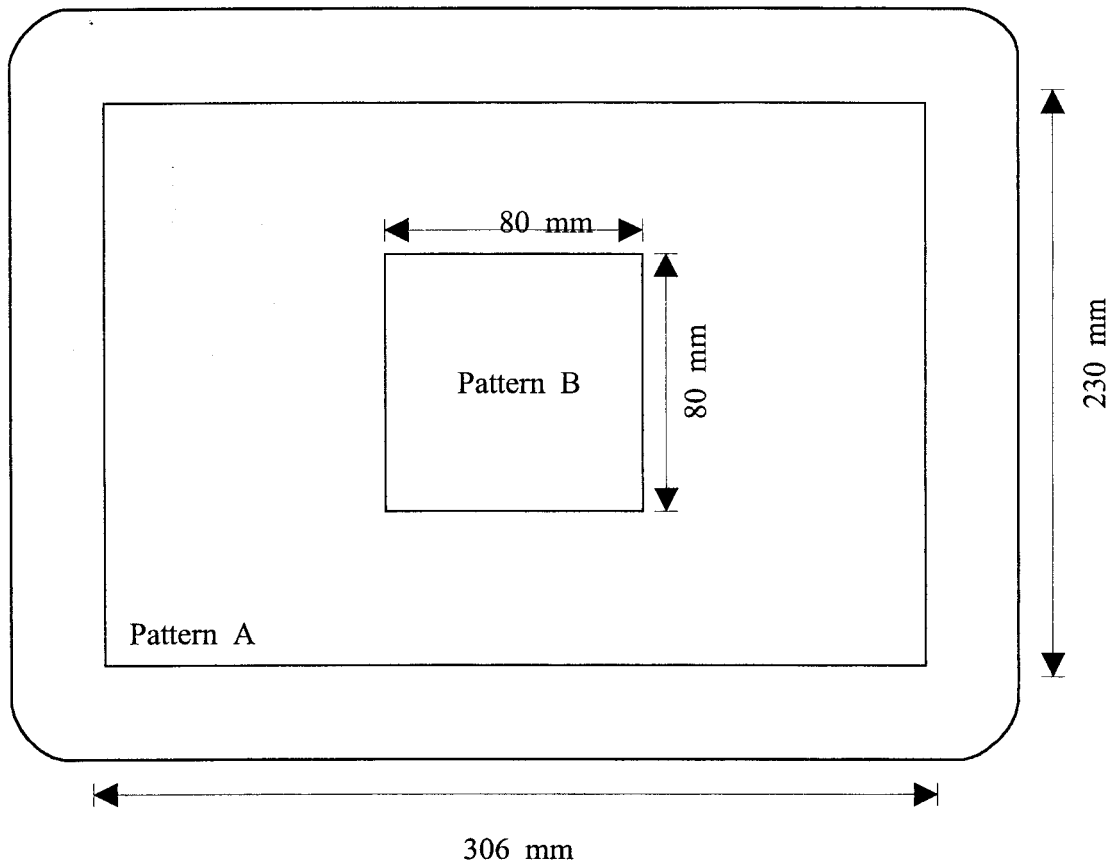

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FIG-5 CONTRAST AND BRIGHTNESS MEASUREMENT PATTERNS

CLASS NO.	17" CM2400 GS-III 107B2 CMTR							
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)			8639 000 10636				
NAME S.C.WU	SUPERS.		23	590 — 21	10		A4	
TY	CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.					

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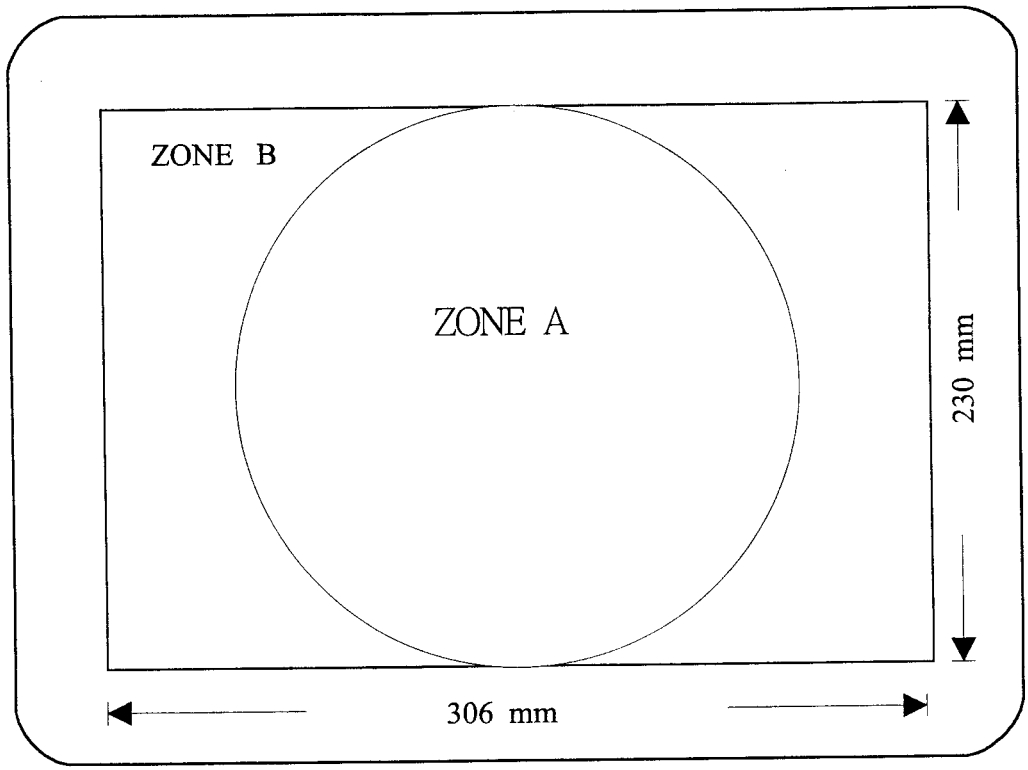

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FIG-6 MISCONVERGENCE MEASUREMENT AREA

CLASS NO.	17" CM2400 GS-III 107B2 CMTR					
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636				
NAME S.C.WU	SUPERS.	23	590 — 22	10		A4
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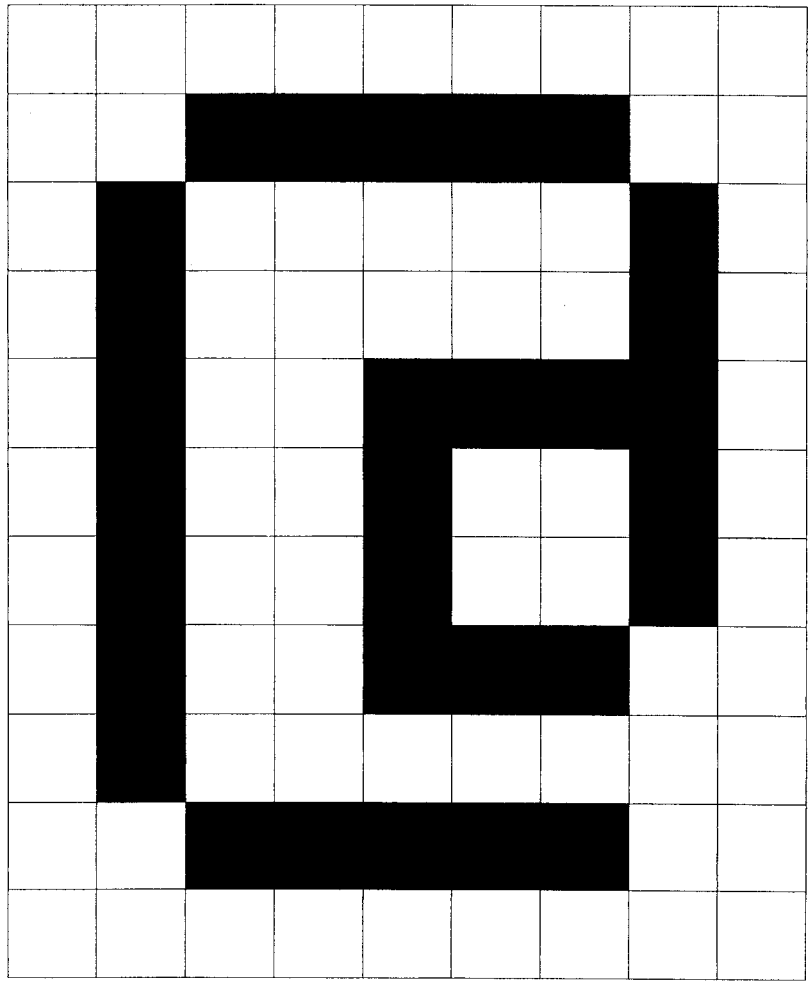


CHARACTER FOR FOCUS

(CHROMA 2200/2250 CHR NO. 56)

FIG - 7

CLASS NO.	17" CM2400 GS-III 107B2 CMTR						
00-06-28	TYPE : 107B20/74H BRAND : PHILIPS (92K)	8639 000 10636					
NAME S.C.WU	SUPERS.	23	590 — 23	10		A4	
TY CHECK	DATE 00-06-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.					

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both **Hi-pot** and **Ground Continuity** testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time (Tester)	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, Service center shall use DC voltage.

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.

2.2.3 The test voltage must be maintained within the specified voltage + 5%.

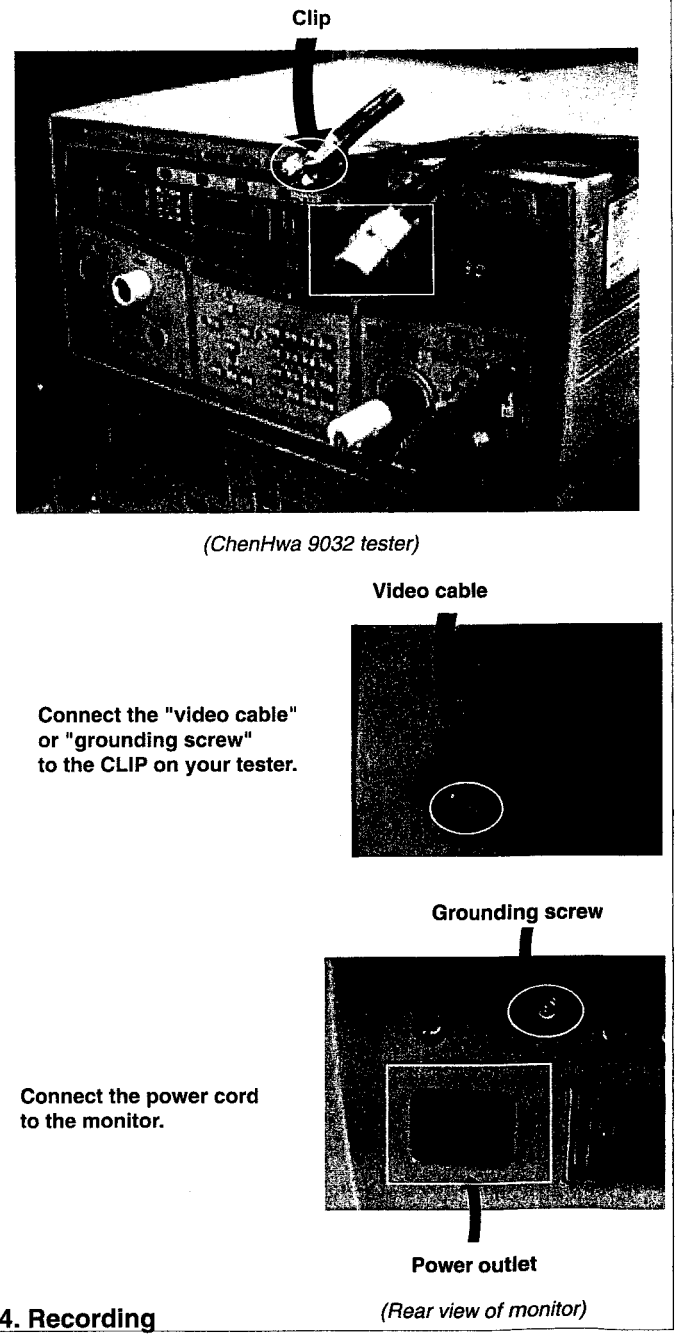
2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

3.1 Equipments
For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2 Connection

* Turn on the power switch of monitor before Hipot and Ground Continuity testing.


Clip
(ChenHwa 9032 tester)
Video cable
Connect the "video cable" or "grounding screw" to the CLIP on your tester.
Grounding screw
Connect the power cord to the monitor.
Power outlet
(Rear view of monitor)

4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

LightFrame™ for Windows

Introduction

Philips LightFrame™ feature enriches the experience of pictures and video on a Philips CRT (picture tube) monitor. This highlighting is done by boosting the brightness and sharpness on a selected region of the monitor screen. Since high brightness and sharpness are not preferred for most standard Windows applications, this special feature will only be active in certain circumstances. So that you can control these circumstances, a special program and icons will be installed in your Windows operating systems.

Notes

Philips LightFrame™ will only work with monitors that have been built to use this software. Earlier Philips monitors or other manufacturers' monitors will not work with this special software. It is recommended that you install this software only on a Philips monitor designed to use it. These monitors can be identified by the LightFrame™ logo on the front of the monitor.

This software is not designed for use with LCD flat screen monitors.

LightFrame™ will work with true Windows-based programs and DOS-based programs that operate in a Window's environment. It will not work with DOS-based programs operating only in a DOS environment.

Definitions

The following list contains definitions for frequently used words.

Highlighted window: The selected window on which LightFrame™ is active.

Highlighted area: The selected rectangle (area) on which LightFrame™ is active.

Compatibility

This version of LightFrame™ is compatible with
Windows 95
Windows 98
Windows NT
Windows 2000 Professional Edition.

Language Selection

While English is the default language of LightFrame™, the User Interface can be set up to operate in Dutch, French, German, Italian, Portuguese, or Spanish.

Installation

1) To install LightFrame™, place the CD in the CD-ROM drive.

2) Next, when the menu of items on the CD appears on your screen, click on 'Install LightFrame™'.

3) Now, follow the on-screen prompts to properly install the program. The software checks to see if you have a compatible monitor. You must say yes to the license agreement for the software to install.

4) After installation, LightFrame™ automatically loads and the icon appears in the taskbar.

Notes

LightFrame™ is installed in the Start menu, under Programs. Unless otherwise selected during installation, LightFrame™ is installed in "C:\Program Files\Philips\LightFrame." A shortcut is installed in the StartUp folder and on the desktop. (If needed, LightFrame™ can be operated manually from the StartUp folder.)

If LightFrame™ detects that your monitor is not LightFrame™ compatible, an message appears on the monitor screen. See Error Message number 1 under the heading Error Messages. If you see this message, you can select to abort or continue the installation. However, if you continue the installation, LightFrame™ will probably not work on the monitor.

Uninstall

Should you need to remove the LightFrame™ software, please follow these steps.

1) First, click on the Start Menu.

2) Next, highlight Settings.

3) Then, click on Control Panel.

4) Now, click on Add/Remove Programs

5) Finally, select LightFrame from the list and then click on the Add/Remove button.

Operating LightFrame™

After installation, LightFrame™ starts up automatically whenever the computer is started. At system start up, LightFrame™ checks the selected resolution of the monitor and if the monitor is LightFrame™ capable.

Icon and Colors

An icon of a monitor represents LightFrame™ on your desktop. This icon appears as a shortcut on the Windows desktop. LightFrame™ has three (3) modes of operation: Active, Inactive, and Suspended. The same icon with a different color in its center represents each mode.
Active = The LightFrame™ icon has bright green center.
Inactive = The icon has a gray center.
Suspended = The icon has a yellow center with a red cross.

Notes

An active window must be 100% visible, i.e. it must be on top of all other windows or areas. If any part of another window or area overlaps a highlighted window, LightFrame™ automatically suspends operation. That means the icon goes from a green center to a yellow on with a red cross and the feature ceases. Once that window or area is removed and the original highlighted window is on top again, LightFrame™ automatically re-engages and the icon regains its bright green center.

An active window must also be 100% on the monitor's viewing area. If part of a highlighted window moves off the monitor's viewing area, LightFrame™ automatically goes into the Suspended mode. If part of a window is off the viewing area, you will not be able to use LightFrame™ on that window.

Only one window or area at a time can be highlighted.

How To Activate LightFrame™

1) Click on the LightFrame™ icon in the systemtray (the area to the far right in the taskbar). . The icon will turn from gray to a green center.

2) Guide the mouse to the window you want displayed. As you move the mouse, the cursor changes to a small arrow with a light bulb.

3a) Click on the window you want to have highlighted. The brightness and sharpness are automatically adjusted.

3b) If you want to highlight only an area of a window, click on the left mouse button and drag the cursor over the area to be highlighted while holding the mouse button. A rectangle forms around the area. When the area is encompassed by the rectangle, release the mouse button and the area becomes highlighted.

How to Deactivate LightFrame™

To deactivate, click on the LightFrame™ icon in the System Tray of the Taskbar. The light in the middle of the icon turns gray and LightFrame™ is deactivated.

Note

If a highlighted window is closed before LightFrame™ is deactivated, LightFrame™ is automatically deactivated.

Right-Click Features

On the LightFrame™ icon in the taskbar, click the right-side mouse button to bring up a menu from which you can select:

About...which tells you something about LightFrame™

Help which takes you to the Help screen where you can find additional information

Exit which exits the LightFrame™ Program.

If you select exit and the color in the center of the icon is green, it will turn gray and LightFrame™ is deactivated. If you select exit an Exit message appears asking you if are sure you want to exit. Select "Yes" to exit or "No" to abort the exit. If you select Yes, you can always restart LightFrame™ by clicking on the desktop shortcut icon.

LightFrame™ is Suspended When . . .

Screensaver, Sleep mode, Deep Sleep (Power Off) mode is Activated

LightFrame™ goes into the Suspended mode as soon as a screensaver becomes active on your computer. This is true even though the monitor icon may still have a green center. LightFrame™ becomes active again as soon as the screen is reawakened and the screensaver quits.

The same is true when the computer goes into Sleep mode or Deep Sleep (Power Off) mode. LightFrame™ goes into Suspended mode and reawakens when the monitor is reawakened.

Screen or Area is Minimized

LightFrame™ suspends when a highlighted window is minimized. LightFrame™ reactivates when the highlighted window is again maximized or restored to its previous size.

Another Window or Area Overlaps Highlighted Window or Area

LightFrame™ suspends if a window that is not highlighted overlaps a highlighted window. LightFrame™ reactivates once the highlighted window is again on top.

Miscellaneous

Monitor Turned Off

If the monitor is "hard powered off" while a window or area is highlighted and then hard powered on again, LightFrame™ is no longer active. The icon may still show the feature as still active. In this case, you have to exit LightFrame™ and restart it via the icon on the desktop or the Start menu.

If the Monitor is Detached and Another Monitor is Attached

If the monitor is detached from the computer while a highlighted window or area is displayed and then another monitor is attached, the system will have to be rebooted so that Philips' LightFrame™ can detect the monitor's LightFrame™ capabilities and store the setup information about the new monitor. If the monitor is not LightFrame™ capable, an Error message appears. See Error Message 2 under the heading Error Messages. You can abort or continue the set up. However, if you continue, LightFrame™ may not work with the monitor.

Error Messages

You may see this message when you install LightFrame™.

Error Message 1 dialog box here

LightFrame™ cannot detect a monitor which supports this feature. You can still proceed with the software installation but LightFrame™ might not run on your system.
You may see this message when you try to switch monitors.

Error Message 2 dialog box here

LightFrame™ cannot detect a monitor which supports this feature. You can still start the software but LightFrame™ may not work.

TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an s by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol s on the schematic diagrams and /or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock .

* Broken line — • — • — • — • —

Implosion

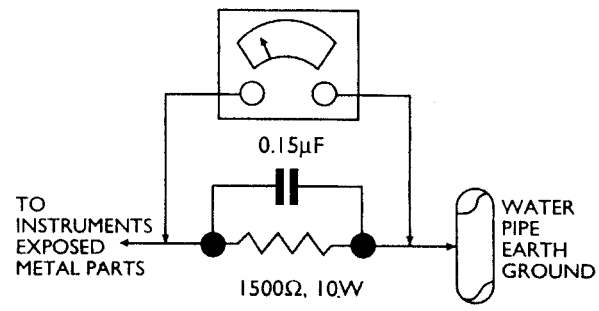
1. All picture tubes used In current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10W resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/ volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage curren tester may be used to make this test; leakage current must not exceed 0.5milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note:An ac adapter is necessary when a polarized plug Is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

WARNING: Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE: The CRT DAG is not at chassis ground.